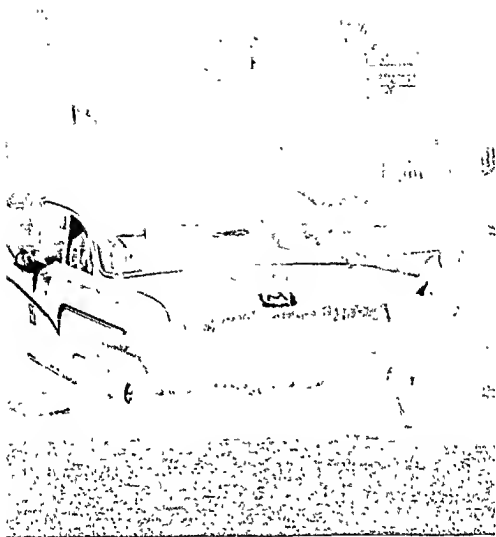


SAFE LIVING



HAROLD T. GLENN teaches in the Long Beach, California, schools. He has many years of experience in teaching driver education, health, and safety. This book has been "edited" by leaders in every field—education, manufacture, law enforcement, and government. It is accompanied by a Study Guide and free Instructors' Guide.

SAFE LIVING

HAROLD T. GLENN

Author of YOUTH AT THE WHEEL

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PREFACE

The accident rate with its resulting injuries and fatalities has risen steadily over the years. It is increasingly difficult to stay alive in the tempo of our modern times. Today's youngster is exposed to more dangers in a single day than children, a generation ago, were in a week.

According to the National Safety Council, in one recent year, 91,000 people lost their lives as a result of accidents and 9,100,000—*100 times as many!*—were injured. This represents a cost to the people involved of \$12,100,000,000 in lost wages, medical expenses, and property damage. The social effects are incalculable.

A study of the causes of accidents leads to the inescapable conclusion that a great many of them could have been prevented by ordinary care. No wonder, then, that educators have come to recognize the contribution they can make to the welfare of the individual by providing classroom instruction in safety education!

Each of life's activities has its dangers—some more than others. A person cannot run away from them, nor can he ignore them. The first attitude is unrealistic and the second foolhardy. The important thing is to learn all we can about the dangers involved in an activity and take steps to minimize them. Then the activity can be enjoyed to the fullest.

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Property Insurance Fact Book, National Board of Fire

Underwriters

Safety Education Data Sheets, National Safety Council

Safety In Family Living, National Commission on Safety

Education, National Education Association

Safety is not new; it has been a problem all through the ages.



CONTENTS

Chapter 1:	WHY WE STUDY SAFETY.....	14
Chapter 2:	AT SCHOOL	26
Chapter 3:	AT HOME	49
Chapter 4:	ON VACATION	99
Chapter 5:	ON THE JOB	131
Chapter 6:	IN AGRICULTURE	140
Chapter 7:	TRAINING FOR EMERGENCIES— FIRST AID	149
Chapter 8:	TRAINING FOR EMERGENCIES— FIRE!	177
Chapter 9:	TRAINING FOR EMERGENCIES— STORMS	209
Chapter 10:	YOU'RE A PEDESTRIAN.	223
Chapter 11:	SO YOU WANT TO DRIVE!... ..	232

CHAPTER 1: WHY WE STUDY SAFETY

Would you do something on purpose that would cause you pain? Running in front of a moving car or sticking your finger into the blades of a revolving fan would surely hurt. You avoid such things because you know what would happen. Most accidents are the result of our *not knowing* the cost. To avoid accidents, we need to know the possible dangers and the best means for avoiding them.

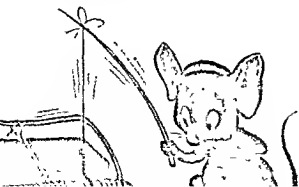
This book has been written to show how to live and play the safe way, to recognize dangers, and to help you learn how to act correctly in the event an accident occurs.

NEED FOR SAFETY EDUCATION

As a baby, you were unable to protect yourself from harm but your parents watched over you. As you grew older, your physical activity increased. You moved about more, crawled, and tried to walk. You stumbled, fell, and grabbed tablecloths and other things that were not fastened down securely. Wise parents anticipated trouble in the making and removed all visible hazards. They had learned from experience just what was dangerous.

Accidents kill more children every year than the seven most common childhood diseases combined.

Teenagers have a much higher death rate than sub-teeners. This is partly because teenagers have a wider range of activities.



There's always a safe way to do any job.

COURTESY NATIONAL SAFETY COUNCIL



Why We Study Safety

As a baby you were protected by wise parents. Note the safety belts. A child does not have enough experience to protect himself.

COURTESY AUTO-CRAT MANUFACTURING COMPANY

In other words, as you grow up, you do more in the world and expose yourself to more risks.

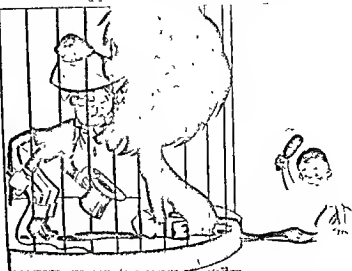
We are exposed to more dangers in a single day than our grandparents were in a week. This is because of our many uses of the machine, and today's fast-moving transportation. The machine is everywhere in the home, such as in cooking, cleaning, heating, refrigeration and air cooling, washing, drying, and ironing clothes. Even garage doors open and close automatically by electric power.

The automobile has taken the place of the slow-moving horse; supersonic planes dominate our skies; and rocket-power promises to shrink the size of our world—and ultimately the universe. Our civilization is known as a "world on wheels," and



An infant cannot understand dangers such as this. It is the parents' duty to protect their children from such risks.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA



COURTESY NATIONAL SAFETY COUNCIL

Here is quite a "tale" to be told!

As you begin to grow, your range of activities widens. Your safety becomes partly your own responsibility.

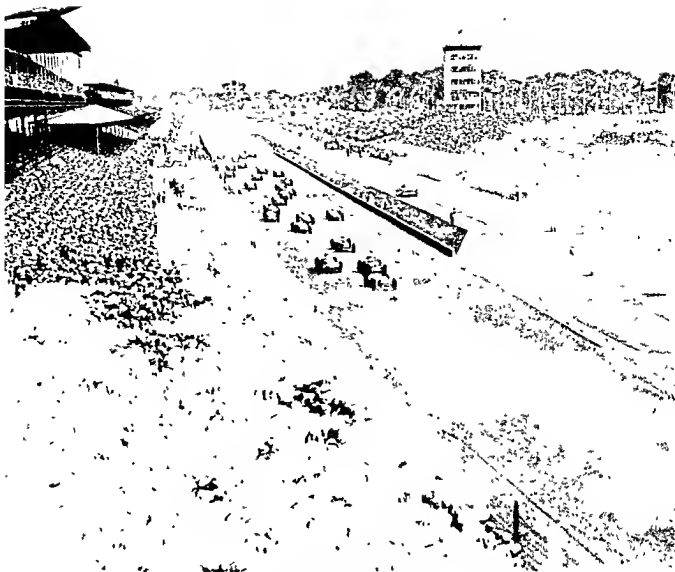
COURTESY INSTITUTE FOR SAFER LIVING,
AMERICAN MUTUAL LIABILITY INSURANCE CO.

is also becoming a "world on wings." We must learn all we can about safety features in this new world.

Your first safety lessons were warnings against doing certain "wrong" things. However, it is only normal to want to take part in the exciting activities of today's world. You might as well not



Burying your head in the sand like an ostrich, to avoid danger, is not without danger.



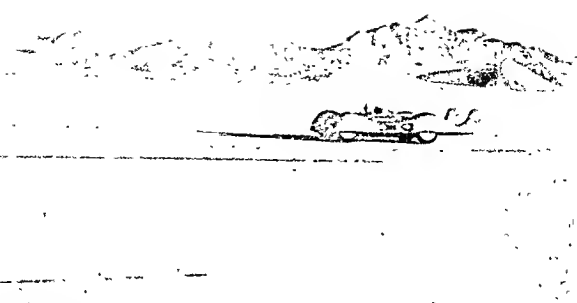
COURTESY INDIANAPOLIS MOTOR SPEEDWAY CORPORATION

Our world is known as a "world on wheels." But a crowded highway is not as safe as this carefully planned speedway.

be alive if you keep your head buried in the sand. The secret of a good life is to do the things you enjoy—but do them in the safest way possible in order to minimize the risks. So that you may live longer, safer, and more happily, this book will help you examine all your activities so that you can prepare yourself better to enjoy them successfully and safely.

SAFETY IS FOR "HE" MEN

If you ever take up the really dangerous sports such as mountain climbing, auto racing, or big game hunting, you will find that the best performers are level-headed and safety-conscious. The thrill seeker or show-off seldom lives long enough to enjoy success.



COURTESY GENERAL PETROLEUM CORPORATION

The real "he" men, who set speed records, take no unnecessary chances. Every attention is given to safety. This Renault Shooting Star speeds *safely* across the Bonneville Salt Flats, Utah, at 191.2 mph.

If you think that safety is for sissies, watch the thorough preparation racing drivers make before a race. They always prepare for known dangers. Notice how carefully they inspect their cars and the track for dangerous conditions. The oil-slicked curve, the ruts, and the weakened guard rail where a crash once occurred—these things occupy their attention. Good drivers take no unnecessary chances. The show-offs and fool-hardy drivers live exciting lives, too—but *short ones*.

Why not decide to join the group in the "know" so that you, too, can live an exciting life—and a long one!

The speed trials were preceded by a thorough inspection • Nothing was left to chance • The engine and chassis were thoroughly checked.

COURTESY GENERAL PETROLEUM CORPORATION





COURTESY INDIANAPOLIS MOTOR SPEEDWAY CORPORATION

Nothing is left to chance during a refueling stop. Notice the two men with fire extinguishers ready in the event of fire.

Cliff Bergere, a veteran of the 500-mile Indianapolis classic, uses a hand exerciser to develop his hand muscles. "He" men never take unnecessary chances.

COURTESY INDIANAPOLIS MOTOR SPEEDWAY CORPORATION

This young pilot understands the importance of a thorough preparation before taking off. He is going over his checklist with a CAA inspector.

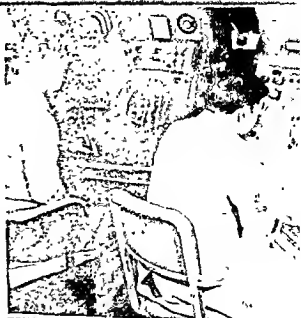
COURTESY CIVIL AERONAUTICS ADMINISTRATION





COURTESY GENERAL PETROLEUM CORPORATION

The winner! He is the man who makes a thorough preparation and knows the importance of safety.



COURTESY CIVIL AERONAUTICS ADMINISTRATION

A great many men work on safety as a part of their job in bringing in a giant airliner. These men are observing the "blips" which indicate the passage of an airliner in a landing approach. The job of these men is to help the pilot land the plane safely.

The Utah Salt Flats contain the wreckage of a failure to prepare properly.

COURTESY GENERAL PETROLEUM CORPORATION



Over the goal he goes! Such skill represents a lot of practice and a thorough preparation.

COURTESY LOS ANGELES RAMS



PREPARATION IS IMPORTANT

Neither you nor I want to see a football game in which the ball carrier walks down the field while the opposing players move aside to avoid hitting him. This would be the safest way to do it. But the game would be ruined. Instead, we all want a good, hard game—a thrilling one.

The best and safest player, understanding his risks, protects himself with helmet, shoulder, knee and shin pads, thigh guards, and high top shoes for ankle support. The rules require a face protector in prep schools. He *practices long hours* to toughen those muscles needed to withstand the violent physical contact he expects to meet. Before the game, *he warms up* to prepare his muscles. Imagine how a typical game goes! The stands are packed with wild-eyed fans who root for their favorites, want their team to win, and give little thought for the players' safety.

Let's pretend the score is tied, the ball is kicked and our friend, the trained football player, catches it on his own one-yard line. He starts off for the opposing goal and eleven men race to stop him. His teammates are trained to protect him from that crash toward which he is racing at top speed. They try to make an opening in the line as he races into the opposing team. The spectators rise as one person and a mighty shout thunders across the field. Our ball carrier dashes on toward apparent destruction.

There is a tangle of bodies as the two teams meet, an instant of confusion, and then the ball carrier stumbles free. But three members of the opposition also avoid the tangle and spot the ball carrier. They wheel and strike out for him. Running swiftly, they close the gap. Our ball carrier recovers full stride as he sizes up the situation out of the corner of his eye while winging on toward the distant goal line.

The first opposing player dives for his knees—but, at just the right moment, the ball carrier spins sharply out of the defender's grasp while the stands roar in fear or approval. However, this costs our man a few steps and two other defenders close the gap. The nearest one tries a flying neck tackle—but, gets a twisting stiff-arm for his efforts, and tumbles to the ground. Again our man recovers his stride, digs in his cleats, and races toward the goal. The honor of his school is at stake. The stands go mad—the noise is overwhelming.

This broken-field effort takes time, however, and the last defender, the safety man, is closing the gap with terrific speed. Our man is crossing the opponents' 20-yard line. Will he make it? Just as he leaps for the goal stripe, the tackler comes in on the fly, hits, and both go down in a spectacular dive toward the goal. The stripe-shirted referee is almost on top of the ball. His whistle pierces the tumult of sound. The one question in everyone's heart is, "*Did he make it?*" The fans are on their feet stretching to see the answer. The referee rises from his crouch, with both hands flung high over his head.

He made it—*he made it!* The two players rise slowly, as their teammates pour in on them. The last seconds have ticked away. The crowd sounds like a thundering giant. *The game is won.*

But let's go back to the mixing of the opposing linemen and backs in that hard contact of human bodies. The physical contact is made, and not without its dangers. A player can be hurt, sometimes severely so. But in the main, the long hours of practice to toughen muscles, the knowledge of how to block and tackle properly, and the runner's knowledge of how to

Notice
the safety
equipment
a football
player uses.



side-step, spin, and stiff-arm a tackler, pay off by minimizing the dangers. The same lesson is to be learned from all sports as well as other exciting activities of life. If you understand the risks and take the right training and precautions, you can participate to the fullest, enjoy yourself, and engage in a full schedule of life's activities. This is *effective safe living*.



You cannot be injected against an accident; therefore, you must always be alert.

COURTESY STATE COMPENSATION INSURANCE FUND



Accidents happen to the over-confident person, the one who forgets to stay alert.

CONSTANT ALERTNESS IS NECESSARY

Your carefulness yesterday can't help you to avoid an accident today. You must be on guard at every moment—*right now*—to avoid accidents.

Accidents are likely to happen to the over-confident person, the one who has done the same thing often enough to feel secure in his ability to do it safely every time. Consider the case of a fellow who sleeps in every morning until the last minute. He is always rushing to get washed, eat breakfast, and be off to school before it is too late. (Is this a description of you?) Every day he takes the turn at the head of the stairs on "two wheels" and clatters down the steps two at a time.

Now, with the confidence born of having done this same thing many times, our always-late friend speeds up the process one morning because he had slept later than usual. He dashes to the head of the stairs and "squeals" around the corner on "one wheel." Down the steps he flies, this time four at a time. But (and what a dirty trick) Sister has left her skate on the fourth step from the top of the landing. . . . There's no need to complete the story, as you get the picture.

TOPICS FOR DISCUSSION

1. What is the meaning of the term *effective safe living*?
2. Explain why teenagers have a higher death rate than sub-teeners.

3. Explain how the speed-up of modern living has increased our exposure to danger.
4. Why can it be said that true adventurers *never* take *unnecessary* chances?
5. What precautions do football players take to lessen the dangers of the game? Baseball players? Basketball players? Hockey players?
6. Why do accidents happen to the over-confident person?

SELF-CHECK TESTS

Multiple-Choice

1. Teenagers have a: (a) lower; (b) the same; (c) higher death rate than sub-teeners.
2. Your first safety lessons were: (a) controls by your parents; (b) the study of safety; (c) warnings of dangers.
3. Safety is important for: (a) he-men; (b) sissies; (c) everybody.
4. The most important safety consideration for an athlete is: (a) thinking about safety; (b) carefulness during the game; (c) thorough preparation.
5. Most accidents happen to the: (a) professional; (b) amateur; (c) over-confident person.

True-False

1. Most accidents are the result of the other person's mistake and, therefore, not avoidable.
2. To avoid accidents we must be born under a lucky star.
3. Wise parents protect a baby from harm at all times.
4. The conditions of our times have not increased danger to life and limb.
5. The secret of a safe and normal life is to do the things you enjoy doing even if they are dangerous.
6. Athletes are seldom hurt because they study safety.
7. Safety must be practiced at every moment; otherwise, it has no value.

Completion

1. Teenagers have a _____ death rate than sub-teeners.
2. As a teenager, you are exposed to more accidents in a single day than your grandparents were in a _____.
3. True adventurers, who live to enjoy an exciting life to its fullest, always prepare for _____ dangers.
4. Accidents often happen to the _____ person.

CHAPTER 2: AT SCHOOL

The purpose of your safety class is to develop in you the attitude, skills, and knowledge needed for *effective safe living*. Mere knowledge is not enough; a person may know all the safety rules, *but* the fact that he still takes chances proves he is not safety conscious. To be most effective, safety must be a part of you. Safety is a way of living—not just a series of memorized facts.

The more you participate (take a part) in safety activities, the more safety conscious you become. Participation can be of the passive or active type. *Passive* participation describes the least effective type—for example, just listening in class; *active* participation is the process of helping in safety work. You can stop with classroom discussions, or you can help with safety projects as well. The rewards of active participation in a school-wide safety project are greater because taking part makes *you* more safety conscious. Think about what this means. As you become active in safety work, you pay more attention to the unsafe actions of your schoolmates. Your awareness (the way you see things) deepens, and safety becomes





COURTESY LONG BEACH POLICE DEPARTMENT AND THE MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY

The more that younger children participate in safety activities, the more safety conscious they become. The cub scouts at left are helping to pass out safety stickers which warn motorists that school zones require slower speeds. Do your young brothers and sisters help? The class for younger children in safety is organized to try cases of safety violations. The class acts as the jury and one student acts as a judge. Note his gavel. The officer is giving testimony.

part of you, *consciously* first, and then subconsciously. This is an important point.

What do the terms "conscience" and "subconscious" mean? Look up these words for yourself.

The most successful safety programs are those in which the projects are proposed by the students themselves, and in which you and your classmates have a large measure of self-direction; it stimulates interest.

Different schools have different problems depending on their size, physical layout, and organization. The way to go about selecting safety projects is to discuss in your safety class some of the dangerous situations you note about the school grounds and buildings. Then it will become evident just where help is

This school had a bicycle problem with younger students. The ground-patrol member cited the rider for running into the girl and is pointing out the bicycle defects to members of the safety committee who are trying the case. This very young driver (right) is learning courtesy at Garfield School, Phoenix, Arizona. He stops to allow a pedestrian to use the crosswalk under the approving eye of the police officer.

COURTESY AMERICAN AUTOMOBILE ASSOCIATION AND THE MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY



A member of the junior traffic patrol helps to protect his classmates.

COURTESY STATE OF CALIFORNIA, DIVISION OF HIGHWAYS



needed. If you feel that you can help your school eliminate a problem of control or make a situation or area safer, then by all means form an organization to do the job. This is the most effective way to become actively engaged in safety and you will receive a great deal of satisfaction in knowing that you are helping your school and younger students.

To help you analyze the particular situation in your own school, some solutions to problems of other schools are presented. You, of course, can use or alter any of the following subjects to fit your school needs:

- School patrols and committees.
- School safety assemblies.
- School newspaper reporting.
- Safety clean-up committees.
- Home room reporting committees.
- Check lists of home safety conditions.
- Check lists of school safety conditions.
- Class discussion of the textbook.
- English themes on the subject of safety.
- Trips to community organizations such as fire, police, health and your local Safety Council.

SCHOOL PATROLS AND COMMITTEES

School committees provide opportunities for members of your safety class to manage school-wide safety activities. Such active participation increases your own awareness of safety while you are protecting the lives of your schoolmates.

School patrols and committees influence the entire student body through regular presence at their posts and through their personal example. By carrying out their duties, patrol members serve to remind all other students of sound practices which might otherwise be overlooked.

The types of patrols or committees which might be organized are:

- School bus or streetcar.
- Playground or physical education (gym).
- Traffic.
- Building.
- Fire.
- Shop, Homemaking, and Science.

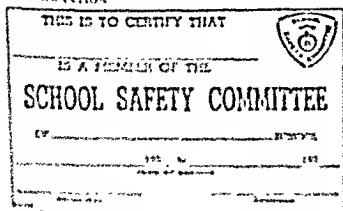
SCHOOL BUS OR STREETCAR PATROL

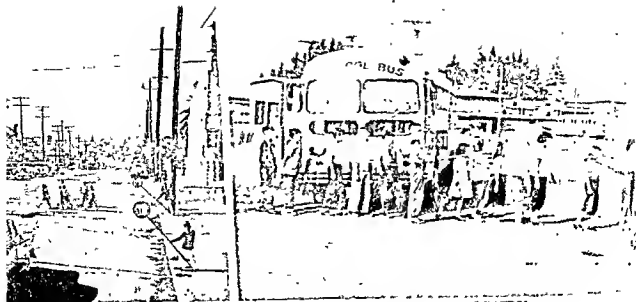
Some of the duties of this patrol would be:

- Helping to maintain order while students board the bus.

Many schools provide badges and cards for patrol and committee members. Such distinctive emblems of office lend prestige to the wearer.

COURTESY AMERICAN AUTOMOBILE ASSOCIATION





COURTESY CALIFORNIA DIVISION OF HIGHWAYS AND WASHINGTON STATE PATROL

Traffic patrol members are given special stop signs to halt vehicular traffic in some cities. Bus patrol members provide safe passage for bus riders.

- Seeing that students are seated before giving the bus driver the signal to start.
- Seeing that aisles are clear of textbooks and lunch boxes.
- Helping smaller children to enter and leave the bus.
- Helping to maintain good discipline on the bus by having one member seated in front and the other in the rear of each bus.
- Reminding students to keep their hands inside of the bus.

PLAYGROUND OR PHYSICAL EDUCATION COMMITTEE

Some of the duties of this committee would be:

- Cooperating with the teacher in charge in carrying out safety assignments.
- Keeping the playground free of safety hazards.
- Seeing that equipment is properly used during activity periods.
- Reminding students to keep within their assigned areas.

No matter how big the task, each member of a patrol must carry out his assignment to the best of his ability.

TRAFFIC PATROL

Some of the duties of this patrol would be:

- Stopping jaywalkers. (What is a jaywalker? Discuss this.)
- Restraining student-pedestrian traffic until a group has gathered, after which the group would be allowed to proceed during a lull in traffic.
- Cooperating with the officer in the event one is stationed to control vehicular traffic.

BUILDING PATROL

Some of the duties of this patrol would be:

- Helping to control corridor traffic.
- Helping to control stairway traffic.
- Helping to control lunchroom traffic.
- Helping to control assembly traffic.
- Helping visitors find their way around the buildings.

FIRE PATROL

Some of the duties of this patrol would be:

- Helping to maintain order during fire exits.
- Initiating fire-prevention activities.
- Developing skill in fighting fires.

SHOP, HOMEMAKING, AND SCIENCE COMMITTEES

Some of the duties of these committees would be:

- Cooperating with the teacher in charge to carry out safety assignments.
- Helping to keep the assigned area free of safety hazards.
- Helping to see that equipment is used properly.

ORGANIZATION OF PATROLS

To avoid confusion, your teacher will probably appoint the members of your safety class to the first committees which are started in classes they attend. For example, the safety class members who are also members of the woodshop class are ideally suited for first membership on the woodshop safety committee.

Instructor's note: Patrol and committee members should serve for a limited period so that most of the class members share in the experience. Also, patrol members may rotate or change from one patrol to another so that they receive different experience in safety. All members of a patrol should not be changed at once. This is called "overlapping terms."

RESPONSIBILITIES OF PATROL AND COMMITTEE MEMBERS

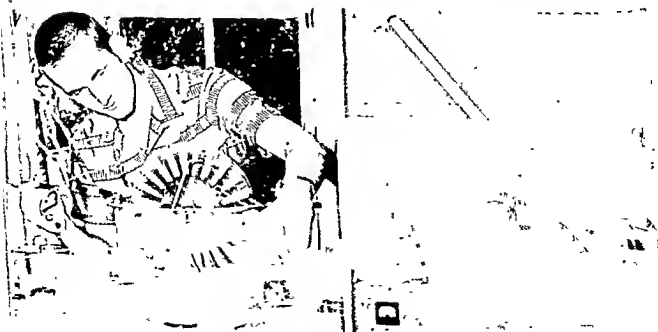
- Practicing the safe way of doing things.
- Setting a good example at all times.
- Reporting for duty promptly.
- Patrolling posts efficiently.
- Suggesting improvements in class discussions.

SCIENCE LABORATORIES

The science laboratory is one of the safer rooms of the school in spite of corrosive chemicals and high voltages. This is because trained science teachers are very safety conscious. They know what can happen if they are careless.

Generally, on the junior high school level, the teacher performs all of the experiments, and the safety precautions are part of his teaching procedure. Students may assist.

The science laboratories are as safe as any other area of the school because science teachers have been trained to be safety conscious. It takes know-how to operate scientific equipment with safety. A tesla coil (right) sends out high voltages which are able to light a fluorescent light tube, as being demonstrated by this boy. Dealing safely with such high voltages requires exacting knowledge and training.





"I guess I should have followed instructions."

COURTESY ALPHA CHI SIGMA FRATERNITY

It is important, to treat all chemicals and apparatus with the care and respect they demand. Carelessness may result in a serious accident. Before you start an experiment, study the procedure carefully. One of the first rules to avoid accidents is to know what you are going to do—then *think* before you do it.

Set up your *apparatus* away from the edge of the bench to reduce the chances of it being knocked off • Keep your face as far away as possible from *chemicals* being heated or poured • Use a face shield to protect your eyes from *splattering* liquids.

INSERT IT
CAREFULLY!

Glass tubing may shatter in your hands if not correctly inserted in a rubber stopper. To insert tubing safely, fire polish the end, lubricate it with water, hold the end close to the stopper, and twist gently. Wearing gloves is additional protection.

COURTESY ALPHA CHI SIGMA FRATERNITY



When *pouring liquids*, hold the bottle so that the label is in the palm of your hand. In this way, the drop that often runs down the side of the bottle will not come into contact with the label and deface it • Laying the stopper on the bench may contaminate it; to avoid this, always hold it between the fingers of the hand which holds the bottle • Wipe off reagent bottles with paper towels • Wash those containing corrosives with water.

When mixing *water and acid*, always pour the acid into water; otherwise a violent reaction will occur • Yellow phosphorus must be handled under water because it reacts violently when it is in contact with air • Avoid spilling an acid or alkali on your skin; if some spills on you, wash it off at once with water.

Some experiments may liberate *poisonous fumes*. Be sure that there is adequate ventilation before you start an experiment. Some deadly vapors are odorless, and cannot be detected by smell.

Fire is an ever-present possibility in the laboratory. A blanket and a fire extinguisher should always be close by and each member of the class given instructions in the extinguisher's use.

On an average, there are five school fires per day in the United States.

Good housekeeping is very important to safety in the laboratory. Glassware shatters when dropped and, if it contains a corrosive chemical, burns are likely to result. Storing corrosive chemicals in an orderly manner will lessen the possibility of such an accident • Provide ample space between bottles so that they can be grasped firmly • Store all chemicals so that the labels are prominently displayed • Keep acids and caustics separate from the others • Label all newly filled bottles accurately and dispose of unlabeled chemicals carefully • Keep heavy bottles as near the floor as possible.

Shattered glass forms splinters which should be scraped up by using the edge of a carton instead of the palm of your hand.

Glass tubing is frequently bent into shape by heating; it re-

mains hot for a long time • Before picking up a piece of tubing, test for heat by flicking a moistened finger across it • The ends of all glass tubing should be firepolished to remove sharp edges • Moistening glass tubing helps to insert it safely in a rubber stopper. Grasp it close to the end being inserted and twist as it enters • Be sure that any flask you are going to heat has the heat-resistant stamp on it; other types may crack or shatter under heat.

ROCKETS

When we began to explore space, there was a rash of amateur rocketry accidents caused by the enthusiastic desire of many budding scientists to help in the work. Four died in one accident—a 40-year-old man and three young persons aged 14, 15, and 17. In one six-week period, 84 other minors and 2 adults were reported injured. This is estimated to be less than half the actual number of rocketry casualties, many of which were unreported. Five of the reported injuries happened to innocent bystanders.

Many scientists continue to support the study of rocketry, but strongly denounce the firing of homemade rockets as non-scientific and a hazard to humanity. They point out that there is a difference between scientific investigation and experiments conducted for sheer excitement. Trained scientists use rockets to propel data-gathering equipment into space for the information they send back; the rocket itself has no scientific value after the satellite is in orbit. To the untrained individual, the "rocket is the thing." The flash of fire, the roar of the exhaust, and the graceful arch of the projectile contribute to the excitement of a launching.

But such a rocket gathers no scientific data; it is only a fearful unaimed toy which can penetrate the roof of a house should it happen to fall on one. Then, too, there is always the danger of the rocket exploding and spraying lethal particles of steel in all directions if the charge is too strong for the container. Sometimes premature explosions occur because of (1) defective

fuses, (2) self-ignition caused by excessive pressure in loading, and (3) chemical reaction between elements of the fuel itself.

Unfortunately, not all homemade rockets continue in the aimed direction. Unless the rocket is designed correctly with its center of gravity behind the center of thrust, a rocket tends to be dynamically unstable in flight. Such a projectile can wander off course, and may even reverse its direction of flight to return to its launching area.

Fourth-of-July fireworks present similar problems. Many people are severely burned or lose their eyesight each year by premature explosions or inadequate care in handling. Many states and cities are making the sale of fireworks illegal.

In one recent year, six people were killed and 896 injured by fireworks. Of the latter, 45 received eye injuries and 24 lost a finger or hand.

HOMEMAKING

The homemaking laboratories contain hazards similar to those found in the home. These will be dealt with in detail in the chapter on Home Safety.

PHYSICAL EDUCATION

More than half of all school accidents occur in the physical

Paper cutters can be finger amputators. Be careful to keep your fingers away from the cutting edge.



There's nothing new about wearing protective equipment.

COURTESY NATIONAL SAFETY COUNCIL



education, recreation, or athletic area. Many physical activities are vigorous, and much of their popularity lies in this fact. To remove all risk would be to remove almost all movement. A safety program in physical education has, as its purpose, regulation and knowledge of the activities so that injuries may be reduced to a minimum.

Limited space leads to overcrowding, accidental jostling, and falls. Lack of storage space leads to leaving equipment, such as parallel bars, in a place where inexperienced students will use them. In crowded situations, students may be improperly grouped; younger students may be included in class assignments which are too strenuous for them.

Rules for handling equipment will come from your teacher, but game equipment such as bows and arrows, the discus, and the javelin should be stored out of reach of inexperienced hands.

Lacking an understanding of your physical abilities can be dangerous • A lack in skills may cause a student to strain himself unduly • A strong belief in luck and a disregard for limits of physical attainment frequently cause a person to take chances • High on the list of accident causes are showing-off and horse-play.

STUDENT LEADERSHIP

Student leaders in the physical education and sports pro-

grams serve an important role in reducing the number and severity of accidents. As an athlete, you are highly regarded in school. Your membership on a safety committee or patrol attracts others and adds prestige to the physical education safety program as well as giving you credit on your out-of-class safety-education assignment.

All committee or patrol members may be called on to help with sports and P. E. programs, by:

- Serving as an official in class and intramural events.
- Assisting in handling spectators at athletic events.
- Assisting in developing and conditioning participants.
- Assisting athletes in pre-game preparations.
- Assisting in supervising activity areas during lunch and free periods, during class time, and before and after school.
- Assisting in controlling the behavior of student spectators.
- Assisting visiting contestants in the use of locker room facilities.

SCHOOL SHOPS

The shops should represent the more accident-conseious school areas because students use sharp hand tools and power machinery. Shop training in safety carries over into the do-it-yourself home-hobby type of activity.

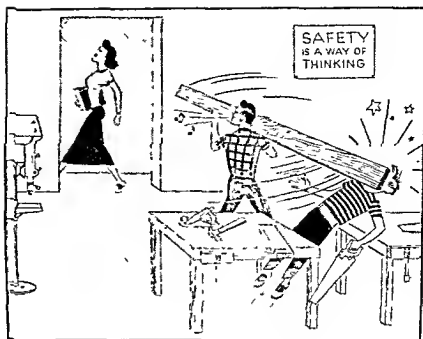
As a school leader, your membership on a shop-safety committee attracts the interest of other students and helps in the school safety program, besides fulfilling a requirement of your safety class.

After proper training, you may be called upon to participate in the following aspects of the school shop safety program:



School shops provide many pleasurable hours while educating in both the practical arts and safety.

Be alert to the right thing at all times—safety, that is!



- Seeing that power equipment guards are in place and functioning properly.
- Seeing that eye shields are used by students in places where their use is required.
- Seeing that work stations are kept clear of obstructions.
- Keeping the floor free of debris.
- Inspecting hand tools for dullness or disrepair.
- Changing the safety poster daily.
- Checking the first-aid cabinet daily.

WOODWORKING

Woodwork is very popular, and hand and machine tools must be used correctly. Misuse of sharp tools or high-speed cutting machines can result in serious accidents. Machines are wonderful servants but very poor masters.

Proper clothing is important in woodwork • An apron, which protects your clothes, is always tied at the back to prevent loose strings from catching in revolving machinery • Sleeves are rolled up past the elbow, and neckties are removed.

In all shops, good housekeeping is very important. Sawdust makes the floor slippery; wood scraps are a tripping hazard

- Use a brush to remove chips and scraps from the bench or



COURTESY NATIONAL SAFETY COUNCIL AND THE JAM HANDY ORGANIZATION

Good housekeeping is very important in lessening the dangers of tripping and falling in a shop. Waste oil-soaked rags are always disposed of in covered metal containers to prevent the start of spontaneous combustion.

machine top. If you use your hand to sweep up debris, you'll get splinters in it • Paint- or oil-soaked rags must be placed in a covered metal container to prevent spontaneous combustion or ignition.



GROUND RIGHT



GROUND WRONG



SAFE



UNSAFE

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

Using a screwdriver that is poorly ground or too small may cause it to slip. What is likely to happen if you are holding the work in your hand when it does slip?

HAND TOOLS

Sharp edged tools are necessary for safer, easier, cutting of wood; however, they can cause serious cuts if improperly used or carried.

Clamp your work tightly in a vise to prevent slipping. This is especially important when removing or installing wood screws, as well as when sawing. A bad palm wound is apt to result if the screwdriver slips when you hold the work in your hands.

Keep sharp tools away from the edge of a work bench to prevent brushing them off • They can cause serious cuts and scratches if carried in your pocket • Keep such tools neatly placed in racks instead of piled in a drawer.

COURTESY THE JAM
HANDY ORGANIZATION



It is not safe to make changes in the position of the table, saw blade, or belt when the motor is running.

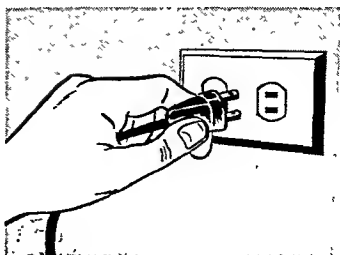
POWER-DRIVEN MACHINERY

Small power machinery may be used in your junior high shops. Later you may take advanced courses. Here is a preview of the safety points for larger machines.

Be sure that you have had adequate instruction in the correct operation of power-driven machinery before using it; take time to review your instructions before starting to work. Be sure that the guard is in place and operating properly; otherwise, call it to the attention of your instructor before you attempt to use the machine.

Rubber mats or anti-slip floor coverings are essential to give you a good solid footing. Safety zones around power machinery must be kept free of spectators or stock. These free areas are important to give you room to maneuver the stock.

Be sure that the machine has stopped completely before you leave it or attempt to make adjustments. Woodworking machines rotate at extremely high rates of speed and coast for a long time after the power is cut off. A coasting machine makes



Pulling the plug before you start adjusting a power-driven machine assures that it won't be accidentally started.

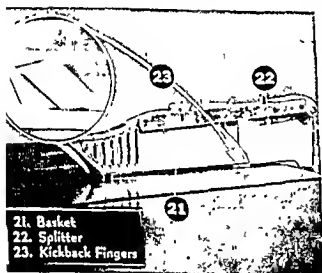
COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

very little noise, which may not be noticed in a shop where the noise of other operating equipment may drown it out. Stand in the operator's position until the cutters stop revolving.

It is a good habit to pull the electric plug from the wall whenever changing blades or making adjustments especially when your hand has to touch the cutters.

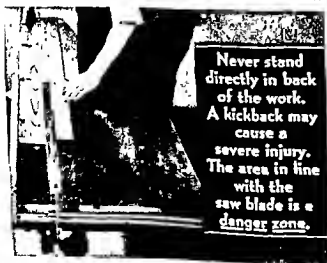
CIRCULAR SAW

The circular saw is one of the more popular machines in both school and the home workshop; it is also the most dangerous. Most saw injuries are of a serious nature, involving deep cuts, amputation, or severe bruises from kickbacks.



COURTESY THE JAM HANDY ORGANIZATION

Many circular saws have multi-purpose guards. The basket covers the saw blade, the splitter prevents the wood from pinching the blade, and the kick-back fingers prevent pieces of wood from being driven back toward the operator.



Guards are provided on all saws. Whenever you use a power saw, be sure that the guard is in place and operating properly. Anti-kick-back fingers are mounted at the rear of the guard to minimize the chances of the stock being driven backwards. Standing to one side of the machine prevents your being struck by kicked-back wood.

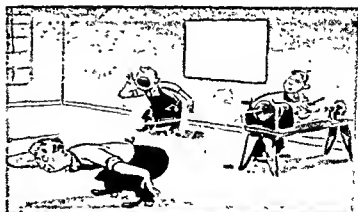
A pusher stick is a "must," especially when cutting thin strips, to keep your fingers a safe distance from the blade.

WOOD LATHE

A wood lathe is used for making round wooden parts. The greatest danger lies in the work flying out of the machine. Sawdust and chips may cause irritation to the eyes. Improper use of tools, or the use of dull tools, may "hang-up" in the work and cause bad bruises.

Use a face shield to protect you from flying chips and sawdust • Be sure that you have no loose clothing to snag and wind up in the rotating lathe • A rubber mat is essential for secure footing.

In mounting the work, be sure that the screws are long enough to hold the work securely, but not so long as to extend into the area to be machined. Should your turning chisel strike an extended screw, the wood will break into pieces and fly out of the spinning lathe with great force.



The high speed of the spindle puts a spin on the drive rod, throwing it out with considerable force. Never leave the drive rod in the spindle.

A misguided missile!

COURTESY THE JAM HANDY ORGANIZATION

With the lathe stationary, adjust the tool rest $\frac{1}{8}$ " above the center line and as close as possible to the work. If you leave too much space, it may cause the chisel to jam between the work and the rest. Turn the spindle over slowly by hand to see that the work clears the rest.

Start the lathe spinning at its slowest speed to check for balance. Use slow speeds until the work is round. As a general rule, the larger the work, the slower it should be spun.

Maintain a firm pressure on the cutting chisel to prevent its being torn from your hand. Avoid using a gouge on the inside of a bowl. It may catch and pull the tool from your hand or pull the bowl from the face plate.

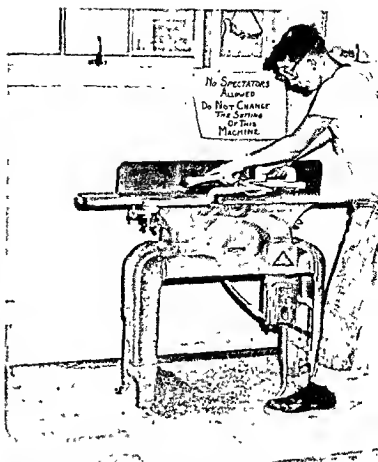
Rags are frequently used to apply a finish to the spinning work. To prevent a loose end from snagging and winding up around the spinning wood, fold the rag into a pad.

BAND SAW

The band saw is used for cutting irregular shapes in wood. It rarely causes an accident, but if you twist the blade it may snap, or it may be pulled off its pulleys by withdrawing it from a curved cut. As the machine is spinning at a very high rate of speed, any damage to the blade may cause it to slither out of the right side of the machine and cause a wound.

The upper saw guide must be adjusted for each thickness of stock. It is important to have the guide as close as possible to the work to give the blade support. *This adjustment must be made when the machine is stopped.*

Stand in front of the machine when operating it and be sure that nobody stands in the danger zone on the side • Feed the stock with an even pressure, especially around curves where the blade is easily jammed • To widen the saw kerf, make a second cut alongside of the first. This helps to get around curves without twisting the blade • Sharp curves should have several relief cuts made from the outside edge to the layout line which will remove the waste stock as the saw reaches the cut. This eliminates the need to withdraw the blade while cutting.



(Left) The woodshop safety committee checks the safety sheet to be sure that the bandsaw operator has taken all possible safety precautions. (Right) A non-skid surface is painted in the operator's position, and the operator is wearing protective goggles. Note that he is also using a push stick to minimize the chances of his fingers coming into contact with the rotating blades.

JOINTER

The risk in using a jointer lies in getting your fingers too close to the revolving blades. A guard is provided to cover the blades; be sure it is in place.

The jointer is made for the edges of boards, not for surfaces.

- Take light cuts to minimize the chances of the work "hanging-up" and being thrown back
- Standing to the left of the jointer prevents your being struck from a piece of work which may fly out of the back
- Feed only pieces of wood at least 10" in length and preferably longer. Shorter pieces will be kicked back.

Feed the stock with the grain to minimize splintering. Use a push stick on thin stock to keep your fingers away from the revolving blades.

SHAPER

The shaper is used for reeding, fluting, grooving, and making mouldings. The spindle rotates at speeds in excess of



This shaper operator knows the value of jigs to keep his fingers away from the blades. Notice that he is also wearing goggles to protect his eyes from flying chips of wood.

7,000 rpm. Shapers can be extremely dangerous because the blades have to be exposed for certain operations.

To prevent the blades from flying out, they must be long enough to extend back into the supporting grooves at least two thirds of the way. The importance of securely locking the knives in place can hardly be overemphasized.

Feed the work into the blades against rotation. Take light cuts. Be especially careful when feeding wood with cross grain or knots, as it is likely to catch.

Use jigs on small narrow pieces of stock to keep your hands away from the blades. Where possible, set up the work so that it covers the blades entirely. In certain cases, it may be better to reverse the cutters and turn the work upside down so that the blades are covered.

SANDER

Disk and small belt sanders are usually found in wood and home work shops. A sanding machine is not particularly dangerous unless incautiously used; the greatest danger lies in sanding your fingers instead of the wood or in getting abrasive particles in your eyes.

Protect your eyes with goggles. They are the only eyes you will ever have.

COUNTRY MARYLAND CASUALTY COMPANY



Inspect the abrasive disk to be sure it is securely fastened to the plate. A cracked or broken disk is liable to catch and rip your hands. Sand on the "down" side of the sander, or the work will be lifted up from the table. Use a face shield or safety goggles to protect your eyes.

TOPICS FOR DISCUSSION

1. What are the objectives of your safety class?
2. Why can it be said that knowing all the safety rules is not enough?
3. Discuss types of participation that you can have, and their effects on becoming safety conscious.
4. Why is it desirable for members of the safety class to serve on more than one patrol or committee?
5. Why are science laboratories relatively safe?
6. Through class discussion, develop a list of hazards in the chemistry laboratory and discuss ways to avoid each one.
7. Why are rockets dangerous?
8. What makes a rocket dynamically unstable in flight?
9. What are some of the equipment and personal hazards of physical education?
10. Through class discussion, develop a list of the accidents you and your classmates have seen happen in physical activities and try to determine the cause of each one.
11. What advantages do *you* get and give others, by serving as a member of a safety committee?
12. Through class discussion, develop a list of hazards found in your school's shops. Discuss ways and means of eliminating each one.
13. What special conditions make woodworking a subject needing extra attention and discussion in the safety class?

SELF-CHECK TESTS

Multiple-Choice

1. Safety is: (a) a subject to be studied; (b) a series of memorized facts; (c) a way of living.
2. The most successful safety programs are those in which the projects are proposed by: (a) the teacher; (b) the parents; (c) the students.
3. It is most desirable for patrol members to remain with one patrol: (a) one semester; (b) one school year; (c) shorter periods and changing occasionally.
4. Which of the following is *not* a duty of a patrol member: (a) tell others how to do things; (b) practice the safe way of doing things; (c) setting a good example at all times?
5. When mixing water and acid, always: (a) pour the water into the

- acid; (b) pour the acid into the water, (c) either way is OK.
- Almost: (a) $\frac{1}{3}$; (b) $\frac{1}{2}$; (c) $\frac{2}{3}$ of all school accidents occur in the physical education department.
 - A safety zone is an area: (a) where safety talks are given; (b) where the safety committee functions; (c) which is kept clear around a machine.

True-False

- Knowledge of safety rules is the most important safety consideration.
- Passive participation is just as effective as active participation in learning to become safety conscious.
- For you, the eventual rewards of active participation in a school-wide safety project are that they make *you* safety conscious rather than help you improve your schoolmates.
- All schools have similar safety problems.
- Active participation increases your safety consciousness.
- Every patrol member must serve on all safety patrols.
- The science laboratory is the most dangerous room of the school because of the caustic chemicals and high voltages.
- Rocketry is a worth-while student activity because of its importance to our national defense.
- The primary purpose of a safety program for physical education is to remove all hazards.
- More accidents occur in woodworking than in any other industrial arts activity.

Completion

- To be most effective, safety must be part of your _____ actions.
- The more you _____ in safety activities, the more safety conscious you become.
- The _____ could be dangerous because of the ever-present possibility of explosion, the use of caustic chemicals, and the formation of deadly gases.
- High on the list of accident causes in physical education are showing-off and _____.
- A _____ is one of the most important safety devices installed on power-driven machinery.

Matching

- Effective safe living
- Safety
- Active participation
- Safety patrol
- Do-it-yourself

- A way of living
- Engaging in safety work
- Home hobby
- Safety committee
- Living to the fullest—safely

CHAPTER 3: AT HOME

Usually accidental death at home is caused by falls, fire or explosion, firearms, poison, or by natural disasters as tornadoes, floods, or earthquakes. The home can be a safe place provided we take care of it. However, this is not always the case. We can get careless as the years pass.

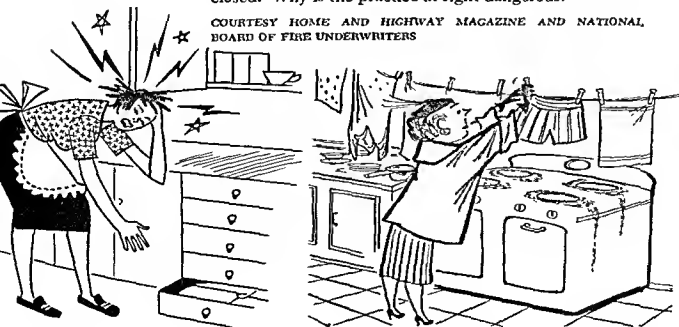
House wiring can go bad in time. The furnace gets old, or the fireplace chimney begins to leak. Floor boards become loose, termites weaken the basic structure, materials of all kinds accumulate about the house—junk for the most part, tossed into corners of attics, closets, and cupboards. Much of it is combustible.

In a recent year, 4,200,000 people were accidentally injured in the home.

We know that our parents guard our safety when we are babies and small children. But we often overlook the fact that we should begin to help protect others in the family as we mature. You can go from room to room and find examples of

You have to be alert at all times, and keep cabinet doors closed. Why is the practice at right dangerous?

COURTESY HOME AND HIGHWAY MAGAZINE AND NATIONAL BOARD OF FIRE UNDERWRITERS



small things that you and your family can do to make your home safer. If you tell your parents about your safety class, and make your first survey of the home together, they probably will be pleased at your interest, and much can be accomplished.

In one recent year, 27,000 people were killed through accidents in the home.

KITCHEN

How important it is that the kitchen—your mother's workshop—be safety-checked. In many ways, the kitchen is the center of family life. This means that you and other family members spend a lot of time there, too.

Special note: Breakfast, which usually is eaten in the kitchen, provides one of the best ways to prepare you to avoid accidents during the day. You are most alert when you eat a well-prepared breakfast in a clean, cheerful, orderly room; it prevents that "all gone" feeling that often occurs as a result of an empty stomach. Two out of every nine young persons leave for school with little or nothing to eat in the morning. If you are one of these two, accidents are more likely to happen to you, according to Aetna Life Affiliated Companies.

Electric and gas connections: A safe kitchen is equipped with the right electrical circuits and connectors—switches and outlets—to serve all appliances. We all acquire bad habits about these things. For example, if we plug in too many small appliances on one outlet, a circuit can be overloaded, and a fuse will burn out or a fire can start inside the wall. A bad wall switch also can cause an electrical short and a fire.

Give all sharp-pointed instruments to someone handle first. (Right) Why is this practice dangerous?

COURTESY NATIONAL SAFETY COUNCIL



Girls: Even though you may never become an electrical expert, your parents, and brothers, will be interested in helping you analyze the *electrical service points* in the kitchen, since it is part of your class work. You and your mother likewise can get some manly help in checking the *gas connections and burners*.

Boys: Here is a chance to learn something that will always be of value to you. You too may need help from older members of the family, but you might be able to assist with some of the small repairs.

Knives: In helping with kitchen tasks, remember these points • Sharp knives are safer than dull ones because you have to apply less pressure when cutting, and the knife is less likely to slip • Use a knife so that the cutting edge is directed away from your body or hand • Each sharp knife should be washed by itself and dried with the sharp edge away from your hand holding the towel • Sharp knives should be stored in a slotted rack or on a magnetic hanger instead of loose in a drawer where they may cut someone who is looking for another utensil.

Cooking: If you are helping in the preparation of the evening meal, remember that some pots contain *scalding hot steam*. By tilting the lid away from you, most of the steam is directed toward the rear of the stove • *Hot fat* spatters when you add wet foods such as potatoes for frying; therefore it is good common sense to allow washed foods to dry before placing them in skillets containing hot fat.

A *boiling liquid* can overflow the pot and extinguish the gas flame. The escaping gas may ignite from another pilot light or cause asphyxiation if you do not notice it. It is good practice to be alert for such possibilities.

Bread wrappers and paper sacks or cartons are frequently left on the gas range. Yet pilot lights are always burning, and such papers ignite easily. Keep all papers off the stove.

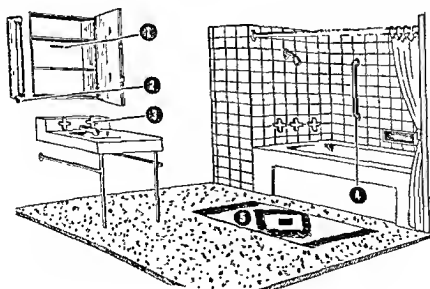
Hot water heater: Pilots on *hot water heaters* usually contain a safety device which prevents the main burner from ig-

ning if the pilot light goes out. If Mother asks your help in relighting such equipment, be sure to read the instructions first. Usually you have to turn off the main burner valve and open the door for a few minutes to vent any remaining gas. Then depress the safety button and light the pilot. You will have to hold in the safety button for at least a minute until the safety control begins to function. After the pilot is lit, turn on the main burner valve, which is automatically controlled.

In lighting a gas oven, be sure to strike the match before turning on the gas valve; otherwise, the oven may fill with gas, and the resulting explosion can burn you severely.

In the event you *smell gas*, either a burner is turned on without a flame or there is a leak. If there is a leak, tell Mother to call the local gas company for a man to make an inspection. Open the windows to vent the room until the leak is repaired. Why do we say, "Searching for a gas leak with a lighted match is suicide?"

Some safety points in the bathroom: (1) A slot for discarded razor blades; (2) light switches close to water faucets should be relocated by an electrician; (3) metal knobs on faucets are safer than porcelain; (4) falls in the shower can be minimized by having a built-in hand rail and using a rubber mat on the bottom of the tub; (5) throw rugs should have a rubberized backing to prevent skidding.



Floor: The kitchen floor receives spattered food and slippery liquids, as well as fallen dishware and glasses. Keeping the floor clean is therefore a real safety precaution, is it not? In other words, we should help clean up any breakage or spills right away.

BATHROOM

Although the bathroom is usually small, and each of us spends less time there than in other rooms of the house, it can be a very busy place in the morning and at night. You're at your sleepest early in the morning and late at night, which is a handicap.

Slipping and falling frequently occur in the bathroom • Careless disposal of Dad's razor blades and the possibility of getting the wrong medicine are worth thinking about—especially if you have younger brothers and sisters • Electric shocks in the bathroom can be very severe because of wet surfaces. (See page 65 for a complete discussion of shock.)

Most falls in the bathroom are caused by slipping in the tub or on a wet floor. Falls can be prevented by being alert. They can be serious because the room is usually so small, with many very hard surfaces. A glass-enclosed shower makes falling doubly dangerous. Think of reasons.

Your parents will recognize the value of placing a mat on the bottom of the tub to lessen the danger of slipping when taking a shower, but the mat must be kept clean • A strong handrail is a great help when getting out of the tub • Soap is

A frequent accident in the bathroom is slipping in the tub. Such a fall can be serious because of the hard surfaces.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY





Touching an electric appliance with wet hands can prove fatal. Your body finds an electrical ground through the water and plumbing.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

slippery, so, if you happen to drop it, wipe the floor carefully to remove all traces.

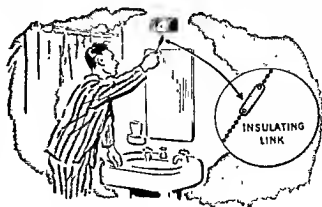
Porcelain knobs on water faucets can break and cut your hand. If you have such knobs in your home, your parents may wish to replace them with metallic ones for safety reasons.

Someone could be seriously cut if used razor blades are carelessly dropped into a waste-paper basket. If your older brother or father is careless in this respect, show him what it says in this book. It is much safer to dispose of the old blades by placing them in the container in which they came. Some medicine cabinets are made with a slot for the disposal of old blades.

How does your family keep the medicine cabinet? If there are small children around, it is safest to keep medicines in a

An insulating link in the pull chain will minimize the danger of shock if a light switch cannot be relocated easily.

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES



locked cabinet. In your role of being a life saver, you know that medicine should be taken only on the prescription of a doctor and then only in the prescribed doses. Isn't it sensible, when taking medicine during the night, to turn on the light to be sure you're getting the right medicine and that you're measuring out the correct dose? It's amazing how many people have died by taking a chance in the dark. Read the label carefully three times: (1) after taking the bottle from the cabinet; (2) before you drink it; (3) and once more after you put it back. If the label is defaced, and you can't read it, the bottle should be thrown away. *You might guess wrong!*

Old bottled medicines should not be used. After a time, some of the fluid evaporates, leaving the mixture much more concentrated and potent. In some cases, time or light has a chemical effect on some prescriptions, causing a change in characteristics. Then too, it is easy to forget just why a medicine was originally prescribed. You may confuse a powerful drug with some mild cough syrup.

After a member of your family has recovered from an illness, all bottles of prescribed medicine should be emptied. Discuss this with your parents. The best place to do this is in the toilet to minimize the possibility of a small child finding the partially filled bottle in the trash can.

Almost half of all poison fatalities are younger children.

A cluttered medicine cabinet is dangerous because you cannot see the labels properly and some bottle may drop and shatter when you open the door. Keep the medicine cabinet orderly and dispose of old medicine.



Children are curious. If you have small ones around the house, lock poisons out of their reach.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

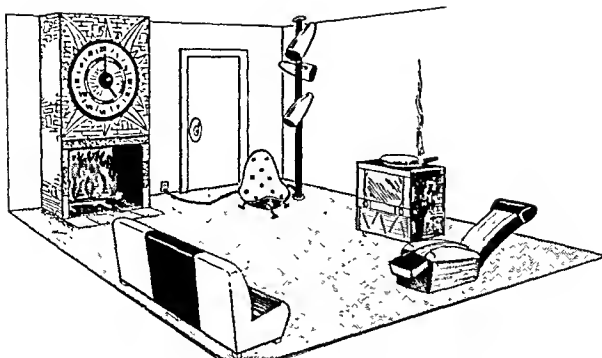


A recent newspaper article pointed out the importance of throwing out old medicines. It told of a man who suffered from a recurrence of an old complaint for which a drug known as calomel had been prescribed some years before. Upon exposure to light, or upon standing for long periods of time, calomel changes into deadly bichloride of mercury. Unfortunately, that is what happened to the calomel for which the sick man hunted and found!

Harsh laxatives and cough cures are "sneaky killers," especially in families where there are children. This is especially true where a bad taste has been re-flavored in an effort to make the medicine more appetizing to children. Sweet-tasting preparations can be extremely attractive to youngsters. Children playing doctor, nurse, and patient often attempt to add realism by using "real medicine" for the patient. Even a bitter-tasting preparation may not always stop them.

Sleeping tablets, taken under the direction of a physician, are of service, but should be locked in a cabinet so they can't be mistaken for something else. An overdose, as little as three times the size recommended, has been known to cause death.

Aspirin, commonly taken to relieve pain, is sometimes used and stored carelessly. Artificially flavored preparations containing aspirin are especially attractive to young children who can be harmed by them.



What three unsafe conditions exist in this picture?

Antiseptics and disinfectants are important to the health and safety of the home. But keep them out of children's reach. Small quantities placed in the mouth are often fatal.

In one recent year, 1,431 people lost their lives by poisoning.

LIVING ROOM

Comparatively few accidents occur in the living room. Christmas tree fires are one. Tripping over badly placed furniture in the dark is another. Toys and magazines strewn around can also cause falls.



Even though you do not smoke, you can empty the ash trays. But what is Judy Holliday doing wrong in this picture?

COURTESY HOME AND HIGHWAY MAGAZINE

Children are curious. If you have small ones around the house, lock poisons out of their reach.

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Storage areas often are used to keep junk which can easily become fuel for a raging fire.

COURTESY NATIONAL BOARD
OF FIRE UNDERWRITERS



Gasoline or kerosene are very dangerous when stored in anything but an approved metal container; they, and similar-volatile liquids, such as *unused paints, varnishes, and paint thinners*, must always be stored a distance from any heater. Better still, be an active member of the family safety council by asking your parents if you may dispose of cans of left-over paints. The paint loses quality anyway and becomes nothing but additional fuel to a fire should one break out.

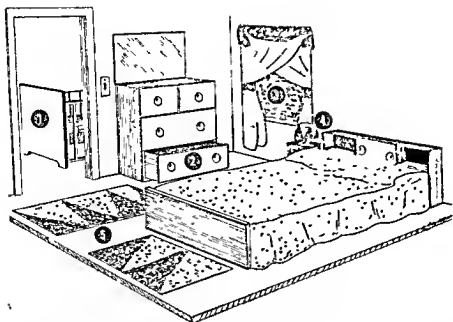
STAIRS

Falls on stairs are another frequent occurrence • Loose step coverings, waxed finishes, and bad lighting can cause stair accidents • Storage of material on stairs is an invitation



The wrong kind of closet lighting.

COURTESY NATIONAL BOARD
OF FIRE UNDERWRITERS



Some possible safety points in the bedroom: (1) Keeping the sides of the baby's crib up will save him from falling. He's also close to the door so that mother can hear him when he needs attention; (2) closed drawers cannot bump or trip you; (3) a securely fastened screen is good protection against a child's falling out of the window, and (5) throw rugs should have rubberized backs to prevent them from skidding.

If you help keep the living room or family room in order, you can be of much service and prevent injury to someone in the family.

Sometimes a fire is started by a lighted cigarette left on a piece of furniture. Careless smoking habits are a major cause of fire. If you do notice a burning cigarette stub, after the smoker has left the room, extinguish it but be careful to dispose of the cigarette in an ash tray and not in a trash can containing combustible materials.

STORAGE AREAS

Fire and gas poisoning are the hazards which exist in the basement, attic, and utility room. All too frequently, such rooms are used for the storage of junk that could ignite through the action of dust and heat. Matches, frequently left in old unused clothing, might ignite from the heat. Good housekeeping is the best accident-prevention agent. Is the closet in your own room free of clutter?



COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

Overloaded electric wiring started this fire. The wires (black arrow) became white hot inside of the wall.

measure that may be more familiar: the watt. Electric companies use this term to compute the family electric bill; electric bulb sizes are also expressed in watts.

The watt is the amount of power you use. For the technically minded, it is the product of the voltage times the amperage. For the average person, it is important to understand the relationship of the *wattage* used as compared with the *current carrying capacity* of the house wiring; the more current you use, the hotter the wires become. If a wire is over-

This defective electrical appliance shorted out and burned through the table, starting a house on fire. Such a defective appliance usually gives some notice through sparks when being used.

COURTESY LONG BEACH FIRE DEPARTMENT BY JOHN J. LLOYD



to the hospital. If you have such hazards in your home, talk the problem over with your parents.

CENTRAL HEATING

If you bank a coal furnace at night, be sure to leave some glowing coals exposed to burn gases and minimize the formation of deadly carbon monoxide gas • To avoid danger from a hot furnace, keep papers and kindling as far removed as possible • Use a metal can, not a wooden box, to remove hot ashes from furnace or fireplace.

ELECTRICITY

The increased use of many electrical appliances in older homes has placed a great strain on the electric wiring. Where formerly a circuit was used only for lighting, it now has to take care of many power appliances and heating devices that require heavier wires and separate circuits. It is so easy to plug in another appliance that the wiring is frequently overloaded and, as most of it is concealed, the damage is not always visible. This is like lighting a fuse on a bomb. The nation's fire losses show this point graphically—in flame.

In one recent year, 70,200 fires were caused by faulty electric wiring and appliances.

Although many people have never heard of amperes, ohms, or volts (which are measurements of electricity), there is one



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13113EX

Judy Holliday blows her entire electrical set-up. One of the worst practices in using electricity is plugging in too many appliances, overloading the circuit.

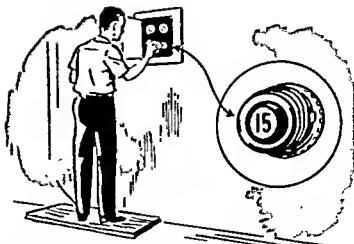
COURTESY HOME AND HIGHWAY MAGAZINE

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COURTESY HARDWARE MUTUALS

A fuse is a protective link in the electric wiring circuit of the home. The link (arrow) is the weakest part, which melts under an overload.



COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

Stand on a dry board to minimize the chances of your getting a shock. Be sure that you are replacing the fuse with one of equal rating.

In one recent year, 3,400 fires resulted from the use of defective electrical equipment in New York City alone.

FUSES

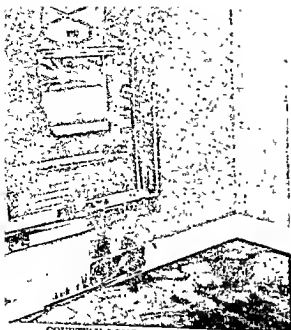
Fuses protect the electrical system just as a safety valve protects a steam boiler. When the pressure of a steam system gets dangerously high, the safety valve opens; when an electric circuit is overloaded, the fuse burns out.

The screw-base type fuse is commonly used in home circuits. On top is a flat, circular, transparent surface through

The main switch, over the fuse box, should be opened so that you will not get a shock while replacing a fuse. Each fuse controls one circuit. If you have marked each circuit beforehand, it is a simple matter to identify the defective fuse.

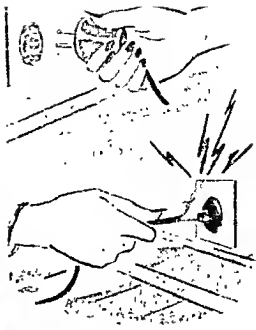
COURTESY BOY SCOUTS OF AMERICA





COURTESY LONG BEACH FIRE DEPARTMENT
BY JOHN J. LLOYD

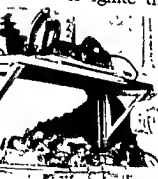
This fire started because of a circuit overload caused by a piece of defective electrical equipment. Notice the burned traces of the wiring on the floor that started the curtains on fire.



COURTESY AETNA LIFE AFFILIATED COMPANIES

The correct way to remove a plug from the wall is shown at the top. Pulling on the wires places an unusual strain on them which could cause a short circuit.

heated, the insulation becomes hard and brittle. Eventually, it may crack off, leaving a bare wire which, if it touches a metallic part of the house, causes a short circuit. Then a heavy current flows through the already damaged wiring. If the fuse doesn't burn out, this leads to fire, as the heat is great enough to ignite the wood framing.

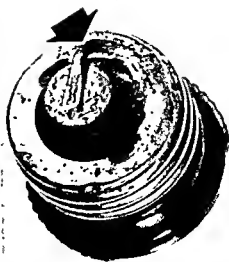


The UL seal of approval means that the electrical appliance has been thoroughly tested. This engineer is testing several irons to be sure that they can take the shock of falling while the thermostat (heat control device) maintains the correct temperature.

COURTESY UNDERWRITERS' LABORATORIES, INC.

This fuse, removed from a fuse box at the scene of a fire caused by a defect in the electric wiring, had a piece of wire soldered between the terminals. Naturally, the wiring burned out instead of the fuse, and the house was destroyed.

COURTESY LONG BEACH FIRE DEPARTMENT BY JOHN J. LLOYD



fuse of higher rating or to tie the circuit breaker in place. In fact, there are cases on record of people using pennies behind a defective fuse or installing a heavy wire across the fuse block.

Americans like to think in terms of "the bigger the better," and this may be true in most cases, but a 30 ampere fuse in a 15 ampere circuit could be disastrous. When an oversize fuse is placed in an overloaded circuit, that circuit is no longer protected and the insulation starts to smolder instead of the fuse burning out. When you visualize all of the many wires in the walls of your home becoming red hot and the insulation burning, the seriousness of the situation becomes very vivid.

The yearly loss in America from fire caused by defective electrical equipment is over \$90,000,000.

SHOCK

Most houses are wired for 110 volts. Some kitchens are wired for 220 volts—necessary where an electric stove, clothes

A shock is an electric discharge through the body. Anyone who has had an electric shock knows enough not to monkey around with electricity.

COURTESY NATIONAL SAFETY COUNCIL



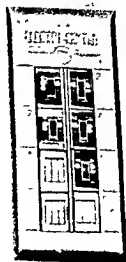
which a flat piece of notched wire can be seen. When an overload occurs, this connection burns out and opens the circuit. To restore service, correct the circuit problem and replace the fuse with one of *equal rating*, such as a 15 ampere fuse in a 15 ampere receptacle.

To change a fuse, be sure to take a few simple safety precautions which can save you from a shock • Stand on a dry board if the meter panel is in the basement or over a damp spot • Use a flashlight to see what you are doing. If it is light enough that you can see without a flashlight, keep your left hand in your pocket and out of trouble • Open the main switch to kill the circuit—before it “kills” you!

Each fuse controls a particular circuit of the house. Your Dad can help you find out which circuit operates each outlet in the house. If you label each fuse as to the circuit it controls, the location of a defective fuse is relatively easy; otherwise, you will have to look for a blackened spot on the mica disk to find the burned out one.

In many installations, a *circuit breaker* replaces the common fuse. To restore service, it is necessary only to reset the breaker switch after correcting the overload.

If fuses burn out continuously or the circuit breaker trips constantly, some people feel that it is quite clever to install a



A circuit breaker often replaces the fuse box. To restore service, it is necessary only to reset the switch lever after correcting the reason for the circuit break.

COURTESY BOY SCOUTS OF AMERICA



Good insulation is important to minimize the chances of your getting a shock when working around electrical panels.

COURTESY NATIONAL SAFETY COUNCIL

can be illustrated by a story. A man was working in a factory in which a circuit switch was labeled, DO NOT TOUCH THIS SWITCH UNLESS MASTER SWITCH IS OPEN. (Opening the master switch removes electricity from the lines and makes it safe to work on.) However, his boss always opened the circuit switch without turning off the master switch, in spite of the warning. One day the worker had to open the smaller switch. He did so without turning off the master switch first, and wound up in the hospital badly shocked and burned.

Later the boss asked why he had disregarded the warning. The man explained, "I saw you throw that switch many times without opening the master switch first. *You* never got hurt! Why?"

His boss replied, "Didn't you notice that I stood on one leg when I pulled that switch? You see, that leg's made of wood!"

PORTABLE ELECTRICAL EQUIPMENT

Portable equipment such as mixers, washers, and ironers can become dangerously charged with electricity unless the appliances are made safe by the addition of a third grounding wire.

If a bare wire should touch any metallic part of the inside of the electric motor, the resulting short circuit will cause the entire appliance to become "alive." This kind of short circuit does not burn out the fuse because the equipment is generally insulated by rubber-tipped feet or wheels. Then when you



The electricity must make a circuit through your body and pass to the ground in order to cause a shock. The result is intensified if you are standing in water.

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

dryer, or electric water heater is used. Regular 110 volts can give a deadly shock under some circumstances; 220 doubly so. All of us have had a mild electric shock at one time or another; the result was a complete surprise to be sure, but not harmful.

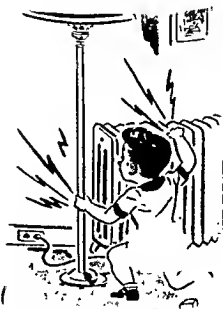
Actually, the degree of shock you suffer depends on how much electricity passes through your body. A 220 volt line causes twice as much electricity to flow as would a 110 volt line. Dampness *increases the flow* and, if you stand in water or have wet hands, the result is intensified—and in some instances fatal. That's why all authorities warn against using a radio while taking a bath. The temptation to retune the set while you are wet can be a shocking affair.

Sometimes you may not get a shock even though you touch a defective fixture which is "alive" with electricity. Such a harmless contact might come about when you touch the defective fixture *and nothing more*. Another time you may touch the same fixture with hair-raising results. This may be because you touch a pipe or are standing on a wet cement floor. The current thus is grounded through your body.

The value of good insulation, such as rubber or *dry wood*,

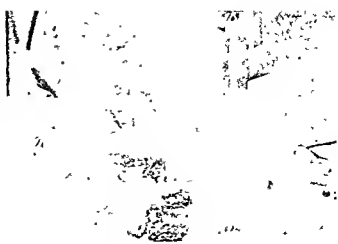
A defective electrical fixture can be alive with electricity and still not cause you to get a shock when you touch it. Should you touch the defective fixture and a good ground (such as a wet floor or a heat radiator) at the same time, electricity will pass violently through your body.

COURTESY AETNA LIFE AFFILIATED COMPANIES



This man is grounding the third wire of an electric drill to a cold-water pipe before using it out-of-doors. Such a procedure protects him from shock.

COURTESY AETNA LIFE AFFILIATED COMPANIES



circuit occur in such protected equipment, the fuse will burn out and render the equipment harmless. On older equipment with a cord containing only *two* wires, a third wire should be run from the metal case to a good ground (water pipe) to make the equipment safe.

FALLS

Falls lead the list of home accidents, including deaths and serious injuries. It is possible that falls cause more people to see "stars" inside of the house than outside. Many falls in the home involve stairways, porch steps, ladders, and other climbing devices.

Poor housekeeping is the number one cause of falls • Slick spots on the floor can be caused by spilled food or water • Loose rugs make footing uncertain • Small objects left scattered around are an invitation to the hospital.

Falling in the home killed 13,600 people in one recent year; it is one of the leading causes of accidents. Rubberized backs or non-slip pads take some of the danger out of small throw rugs.

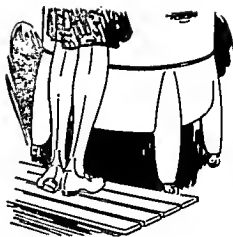
COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY AND AETNA LIFE AFFILIATED COMPANIES





COURTESY NATIONAL SAFETY COUNCIL

Through defects in a portable electrical appliance, the entire shell may become charged with electricity. You will get a severe shock should you stand in water while touching the metallic part of such a defective fixture. One way to minimize the danger of shock is to stand on a *dry* board.

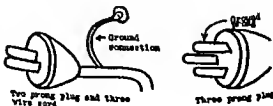


touch any metallic part of such an "electrified appliance" and complete the circuit to ground, electricity flows through your body and you get a severe shock.

Modern electrical appliances come equipped with a *three-wire* electrical cord and plug to prevent this occurrence. The third wire is used to ground the metal case. Should a short

All our best new appliances come equipped with a three-wire cord. The third wire is a ground which causes the breaker to open or fuse to burn out should the equipment develop a short.

COURTESY HARDWARE MUTUALS



On older, two-wire portable equipment, a third wire can be connected from the metal shell of the machine to a good water pipe ground to make it safe.

COURTESY NATIONAL SAFETY COUNCIL



The bedroom is the worst room in the house for falls.

A friend reports the following:

"I recently had a typical fall on a highly polished floor. My wife gave me a very detailed description of the disaster as she witnessed it.

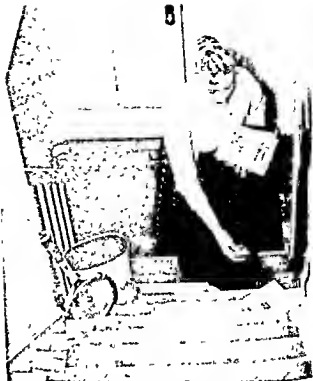
"A small section of floor between the hall and living room is bare of any covering. One day my wife waxed it. Later, as I entered the room, my foot slid out from under me.

"I tried instinctively to regain my footing. My wife described my actions as those of a dog trying to make a fast get-away on a slippery floor. His legs move rapidly back and forth, but *he* doesn't move. My legs were going ninety miles an hour but I wasn't getting anywhere. Suddenly, one of my legs shot out over my shoulder; and the next thing I knew, I had banged my head on the floor.

"To my wife, it looked like an old-fashioned slapstick comedy—but I didn't see any humor in the situation. The victim seldom does; and I'm going to tell her so when I get out of the hospital."



"My feet were going 90 mph
but I didn't get anywhere."



COURTESY HOME AND HIGHWAY MAGAZINE AND AETNA LIFE AFFILIATED COMPANIES

Tacking down the edges of a carpet or rug and finishing with a metal strip greatly reduce the chances of tripping on it. Loose things on the stairs are a major source of trouble. A safety-conscious person removes all such items before someone gets hurt.

Do you have such problems at home? Picking up magazines, schoolbooks, and careful placement of rugs and furniture, certainly are worth while, aren't they?

Falls are the leading cause of accidental death of older people.

Another cause of falls is climbing on stools, chairs, or shaky boxes to reach high shelves. It's much safer to use a step ladder. Have you ever seen an adult risk his or her bones on such a makeshift device?



The bedroom is the worst room of the house for falls. Pablo, a 4½ pound chihuahua, broke his neck bone when he jumped off the bed and skidded on a throw rug.

and every effort should be made to remove it. Salt, ashes, and sand are used to make the surface less slippery. Have you ever seen thoughtless youngsters making an icy slide on a sidewalk on which other people could slip? Do you think they would do it if they thought of the true danger?

Most falls outside occur during the months of December and January.

CHILDREN

You are past your childhood now and well on your way to becoming an adult. Why, then, is it necessary to study children's safety at this time? Actually, there are four reasons: (1) there may be a young child in your home, a brother or sister, whose safety may depend on your knowledge and foresight; (2) you may soon be employed as a baby sitter; (3) in a few years, you may become a parent yourself; and (4) your own safety: When you are actively concerned with the safety of others, you become more safety-conscious yourself.

The lives of 8,700 children, four years old and younger, are taken each year by accidents.

Up to 6 Months

It is sad indeed when an infant is involved in an accident caused by the carelessness of an older person. A baby is helpless and needs complete protection. At no time should he be left in a position which could endanger his health or life.



Do you think this child's parents used good judgment in placing the baby's crib in the back seat of the car? What could happen with a sudden stop?

COURTESY HOME AND HIGHWAY MAGAZINE



Why mothers get gray.

BY J. B. WILLIAMS, COURTESY NEA SERVICES, INC.

It isn't the fall that hurts, it's the sudden stop at the end.
 Prowling around the house at night in the dark isn't safe. You may not want to wake the family up by turning on lights, but one false step, especially near the stairs, may cause a lot more trouble. If you have to go downstairs, be sure to turn on the light first. If your home is not equipped with a light on the stairs, talk it over with your parents. They may want to have one installed by a competent electrician. It may save one of your lives.

Of all falls in and out of the home, $\frac{1}{3}$ occur on stairs.
 Ice on porches, steps, and on walks is a well-known hazard



In icy weather, avoid a landing—do some sanding.

COURTESY NATIONAL SAFETY COUNCIL

Have all supplies on hand before starting to bathe the baby. What could happen if you left the child for a moment?

COURTESY NATIONAL SAFETY COUNCIL



Babies like to suck on toys, crib slats, and other painted objects. Paints containing lead are poisonous. Ask your parents if the baby's crib or toys have been repainted and if the paint used was made with the common lead base. Lead poisoning is not always fatal, but may leave the child mentally retarded. About $\frac{2}{3}$ of all reported cases of lead poisoning occur in children under the age of five. Such cases are evidence of neglect on the part of all those who could have done something to prevent it.

In one large city alone, 21 cases of child lead poisoning were reported in a single year.

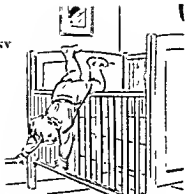
If you should be bathing your baby brother or sister, remember that he is completely helpless in water. Give him your complete attention at all times. Phone calls are "natural" for teenagers—especially girls! But babies are more important! Have you ever read of a baby drowning while the mother was distracted by the doorbell? The daily papers contain many such heart-breaking stories. What would you do if the phone rang while you were bathing your baby brother or sister?

In one recent year, 30 children under one year of age lost their lives by drowning.

One rule to follow when you are caring for a baby is to stay with him. Even when he is asleep, stay in the next room, so that you can hear him if he is troubled.



COURTESY AMERICAN MUTUAL
LIABILITY INSURANCE COMPANY



A parent must always see that the infant's covers are arranged for greatest comfort and safety. The crib slats should be kept up to minimize the chances of the child falling out.

In one recent year, 135 infants lost their lives by falling.

A young baby wiggles and rolls; therefore, when he is in the crib, the sides must be kept up to prevent his falling out. The mattress must be firm and fit the crib properly so that the baby cannot become jammed between the mattress and bars.

Accidents cause more deaths among young children than do diphtheria, scarlet fever, whooping cough, dysentery, and polio combined.

As a baby grows, he shifts his position more frequently. The bars of his crib must be so spaced that he cannot stick his head between them and his sleeping garments and covers must be arranged so that he is kept warm but they cannot twist and tighten around his neck or over his face.

Suffocation is the leading cause of infants' accidental death in the home.



Babies like to suck on toys; therefore some painted items should be kept out of reach.

COURTESY NATIONAL SAFETY COUNCIL



COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

Children may not be aware of the dangers of handling hot coffee pots. Remove such dangerous items from their reach. Sharp instruments must never be left around where a child can reach them. It is the duty of the parent to see that the child cannot get hurt, if possible.

- Safety pins, buttons, and needles should be kept out of his reach • Electric cords are a favorite chewing item. That is why we must pay *constant* attention to a child under our care.

Children often eat and drink the strangest things. Some even love the taste of cod-liver oil. They will drink anything, including paint remover and tincture of iodine. The best protection is to keep all poisonous chemicals out of a toddler's reach—preferably in a locked cabinet. Remember—he can't read rat-poison labels any better than a rat can.

Adults aren't tempted to taste many of the poisons found around the average home. It's lucky for them because many have probably forgotten that some of these things are dangerous. They must have forgotten or they wouldn't leave so many around where very small children can reach them.

Insecticides and certain chemicals are well-known poisons—and are so marked. However, it's very easy to overlook some of the other products commonly found around the home: bleaches, dyes, home-permanent solutions, cosmetics, metal

From 6 to 15 Months

In this period, a baby is becoming much more active. He needs freedom but he also needs limits. If you are taking care of a baby of this age range, keep him in your sight at all times. If you do have to leave him unattended, put him in a playpen so he won't ereep into trouble.

A child needs to touch, feel, and investigate. He is eager to examine the world about him. Thus he gets into difficulty if left alone, especially when on the trail of finding out the "why" of things. Patience and understanding are needed to help let him experiment with the adult world about him and still not get hurt.

About 1,000,000 children are seriously injured each year.

He pokes and probes with his index finger. He is curious about many things, especially those which are above eye level • What we call an electric outlet is a fascinating circle with two small holes which just seem to be made for the insertion of bobby pins or forks • What we see as an electric cord attached to a bubbling percolator appears to be a rope just made for pulling.

Hot foods should be kept in the center of the table so that a toddler can't accidentally reach them. Why are place mats safer than a tablecloth in a home in which there is a toddler?

Everything goes into a child's mouth. Small objects, especially if brightly colored, always merit an experimental nibble



When traveling in the car, this auto seat will protect the child in the event of a sudden stop.

COURTESY THE TOIDEY COMPANY

From 15 Months to 2 Years

A two-year old is an adventurer. The world is his stage. He can rotate his forearm and this means that he can open doors. Doors can lead to basement steps or to rooms containing dangerous objects. Can you think of a door in your home which might lead to danger for a little explorer? What can you do to prevent a possible tragedy?

Inasmuch as a great deal of Mother's time is spent in the kitchen, it is the toddler's usual playroom • The sounds of simmering, bubbling, and boiling are disarmingly soothing • Flame from the gas range, heat from an electric pan, and matches contribute toward burns • Knives, slicing implements, and automatic mixer blades must be kept out of his reach—and you'd be surprised at the extent of his reach • A wise person diverts a two-year old's attention by giving him something to do which will keep him occupied.

The toddler's legs are still wobbly and he is unsure of his footing. Gravity is always tugging at the seat of his pants. While you must protect him from the really dangerous falls, you have to accept a limited number of smaller ones as part of the growing-up process. If a child trips while you are holding

This is a poor way for a small child to learn about electricity • He does not know the difference between shallow and deep water.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA





COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA AND HOME AND HIGHWAY MAGAZINE

It is dangerous to leave poisons and paint supplies around, where there are children • Household cleaners and chemicals should be locked out of the reach of toddlers.

cleaners, and stain removers. Some commonly used cleaning compounds, such as kerosene, kill as readily as any plainly marked poison. By far, the greatest number of victims are very young children.

Each year, 400 pre-school children lose their lives from poisons.

Caustic cleaners, such as ammonia, lye, and washing soda, burn the membrane of the mouth, throat, and stomach. As little as a teaspoonful has been known to cause death. Caustics are common ingredients of packaged water softeners, detergents, cleaning compounds, and drain cleaners so frequently stored under the kitchen sink.

Commonly used *extracts and flavorings* are extremely poisonous when taken in excessive quantities. A four-ounce bottle of vanilla extract contains enough alcohol to prove fatal to a child. The hazard is similar in the case of lemon, orange, and almond extracts, although the degree of danger varies.

Such flavorings as *oil of peppermint* and *oil of wintergreen* consist almost entirely of a poisonous substance which would prove fatal to a child. Neither of these items is labeled as poisonous.

Poisoning causes 51% of all child accidents.



COURTESY THE PRUENTIAL INSURANCE COMPANY OF AMERICA

As a child grows, he gets into drawers—a poor place to keep firearms • Children feel important if called on to help, but what do you think of sawing for such a youngster?

called on to do something. He should not be asked to do such things as using sharp instruments or carrying glass containers.

Accidents cripple four times as many children as they kill.



Part of a 3-year-old's safety education consists of learning about dangerous places—driveways and roadways, for example.

COURTESY AETNA LIFE AFFILIATED COMPANIES



COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA
What are the safest ways to minimize these two dangers?

his hand, *give a little*, instead of trying to yank him back. Little arms can be bruised or even dislocated by a sharp jerk.

Falls killed 225 children under two in one year.

A two-year old likes to play with water. If you're in charge, keep track of him at all times, especially if there's a pond of water or a pool close by. Nearly every edition of the daily newspaper contains stories of children drowning.

In one recent year, 700 pre-school children drowned.

He likes to climb and must be protected from falling. Windows from which he enjoys the view should have locked screens and guards on them.

From 2 to 3 Years

Three-year-olds are nimble on their feet • Stairs should be kept clear of any objects on which the child could fall • Floor coverings should be fastened securely so that the youngster cannot trip • Bare hardwood floors should be dull waxed to minimize the danger of slipping. The same is true of tile or linoleum.

A three-year-old is eager to help and feels important when



COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

To begin a child's education on the danger of burns, warn him or her that it would hurt to put a finger into a flame. Warn him or her that an iron is hot.

child grows, his activities expand and his safety becomes partially his own responsibility. The older he grows, the more responsibility he must assume, until, finally he is mature enough to live in the adult world where most of his safety depends on his own knowledge and actions.

This change cannot come about suddenly, and children must have specific training. They learn through education—education deliberately planned to instill safety consciousness.

"How can this be accomplished?" you might ask. We can let the child find out for himself *under our closest supervision*. For example, *burns*: when he reaches for a hot pot or lighted cigarette, simply say, "That's hot," instead of shrieking at him to get away.

To begin his education on the dangers of poisons, teach him

This mother is teaching her children safety consciousness by warning them to get inside of the car. To be on the safe side, she should raise the window and the children should look the door from the inside. Children learn easily.

COURTESY HOME AND HIGHWAY MAGAZINE



At Home

He can learn from experience—if the experience does not prove fatal.

COURTESY AETNA LIFE AFFILIATED COMPANIES

From 3 to 4 Years

A four-year old covers a lot of ground. He can ride a tricycle and must be taught the rules of safety. He must be taught to remain on the sidewalk and to watch out for cars when passing driveways.

Automobiles killed 4,500 children in one recent year.

He'll have more fun and be safer in a supervised, enclosed play area. He is at an age when he likes to play ball and yet should have as little opportunity as possible to dart into the street after the ball.

"Fourth Down"—and a Lifetime to Go

It has been pointed out that the person in charge of a tiny baby is completely responsible for his safety. But, as the

All too frequently, these events happen. Whose fault is it if the door slams on the boy's hand? Should the boy be blamed? If the parents had taught the boy to be safely conscious, *all three* might have been more alert to the danger.

COURTESY LAMBRETTA DIVISION, INNOCENTI CORPORATION BY TED JACQUES AND AETNA LIFE AFFILIATED COMPANIES



number of cuts, bruises, and bumps. If properly handled, they are the education that will form the foundation or basis for the horse sense and safety consciousness he needs to develop.

Another very important fact to remember is that *children adopt their parents' attitude and copy their behavior*. Remember, you teach better by example than by preaching. A calm, unchanging attitude is one of the soundest examples a parent can set.

HOLIDAYS

Christmas is a most happy occasion in most homes and could be so in every home if simple precautions were always observed. It wouldn't be Christmas to most of us if we didn't have a tree—but do help Dad select one that is no larger than needed. Usually, it's the younger members of the family who want the largest trees. The *larger the tree*, the greater the fire hazard.



Children assume the attitudes of their parents and copy their behavior; accordingly, parents have an obligation to do things in a reasonably correct way.

COURTESY NATIONAL
SAFETY COUNCIL



COURTESY LIBERTY MUTUAL INSURANCE COMPANY

Expect minor bruises and bumps. Handle them with dignity and seriousness. They will help in developing safety consciousness.



COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

What is likely to happen if the car hits a bump in the road or takes a curve too fast?

that only certain foods should be placed in his mouth. Guide him in his explorations of the adult world by pointing out that certain things are not to be eaten. If he should happen to reach for a sliced onion, a jar of mustard, or a can of pepper, instead of yelling at him to stop, simply say, "It doesn't taste good. It might make you sick." In the beginning, he may completely disregard your warnings and taste it. But he won't like it and will once more learn that you are trying to protect him. If you scream at him, you only arouse his curiosity and resentment.

At present, you cannot "take charge" of young children's growth. But it is well to study the responsibilities of parents, so you can appreciate them. A better understanding *now* gives you a great advantage *in the future*.

Parents cannot prevent all accidents. The complete protection given a baby cannot and should not be carried beyond the time the child is out of his crib and playpen. To do so would tend to make the child timid and dependent and to deprive him of the necessary experiences of growing up.

Be sure, however, to take advantage of the educational value of such minor injuries as he may receive. If you reward his bruises and tears with honeyed words or sweets, he may only remember that tears result in cookies. Accept a reasonable

For a Christmas present, many a youngster gets a stuffed animal with glass eyes which can be pulled out and put into his mouth. The safest animal toys have embroidered eyes.

Nearly 600 pre-school children die each year of suffocation by swallowing small objects.

Today, most infants' rattles accepted by the Toy Council are made of a soft pliable plastic, which is practically unbreakable. Should it shatter, however, it would leave only a soft edge which cannot cut. Brightly colored plastic toys are better than painted items, because children put so many things into their mouths.

The only safe *dart games* are those with rubber suction cups

- *Motors* on toys should be well hidden to minimize the number of sharp edges if the child should put it into his mouth
- *Kites* should have dry string leaders instead of wire, which could shock a child should the kite fall across a power line.

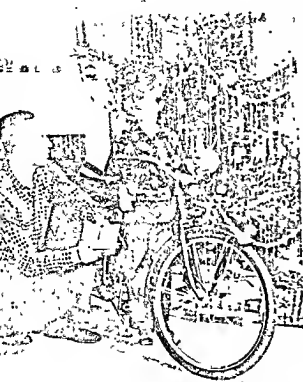
HOBBIES

Food, clothing, and shelter are all that a person needs to keep alive, but there's a big difference between just keeping alive—and living fully. In addition to the usual required daily activities, most people engage in several part-time activities for the pleasures they give; these are called hobbies. Others of



Hobbies are lots of fun—if practiced the safe way.

COURTESY NATIONAL SAFETY COUNCIL



COURTESY AETNA LIFE AFFILIATED COMPANIES

Christmas is a time for joy—we can keep it that way by observing simple safety precautions.



COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

The safest dolls are made to prevent the tot from pulling out the eyes. See that the toys you give are safe.

Also, a *dry tree* burns much more readily than a *green one*. Placing the base of the tree in a moistened, sandfilled container holds it upright and provides the moisture necessary to keep it from drying out too quickly. Remove it from the house as soon as the holidays are over.

During a recent Christmas holiday, 54 people lost their lives by fire.

The location for the tree should not *block a doorway* and should be some distance from a *fireplace* or *heater*. If the tree is placed close to an *outlet*, *electric light cords* will not have to be strung across the floor for someone to trip over, or to be jerked and shorted.

Use only *flame-proof decorations*. Many tragedies have occurred as the result of flames flashing from one room to another on hangings that looked very pretty but were combustible. Flame-proofed material is usually so marked on the box.

Dispose of Christmas present *wrappings* promptly to minimize the chances of fire. It's an easy matter for a lighted cigarette to come in contact with paper and ribbons in the happy confusion that results during family gatherings.

Teasing a dog can be dangerous; he may turn on you and bite.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA



seat with one hand while you keep his feet turned away from you. If you try to pick up a cat by the scruff of his neck, you'll probably get scratched. If you pick up a rabbit by his ears, you'll probably get kicked by his powerful hind legs.

Pick up a dog by slipping one hand under his chest. Use the other hand to support his hind legs. Lifting a dog around the stomach can injure him internally. It hurts, and he's liable to bite you. *Burrs* under a long-haired dog's ears or tummy might make him nip at you. Keep him clean of burrs.

Rabies is a disease carried in the saliva of infected warm-blooded animals. It is usually transferred to humans by bites which are sure to result in infection. The disease of rabies in humans is *always fatal if medical care is not given promptly*. Fortunately, there is some time between the bite and the on-

A dog just doesn't understand your wanting his bone. So keep away.



COURTESY LIBERTY MUTUAL



Chores about the yard can be done safely—but you must be on the alert.

COURTESY METROPOLITAN LIFE INSURANCE COMPANY

us are required to do certain tasks around the house and yard to help in the orderly process of family living; these are called chores. But whether they are chores or hobbies, do them the safe way as explained on the pages which follow.

PETS

A person can become a pet owner (though this is not wise) by bringing home the dog which follows him along the highway—or by lingering too long over a litter of puppies. Owning a pet is like playing a game—it's lots of fun. There are no written rules to the game. However, there are certain unwritten rules to follow if you are to enjoy it to the fullest.

When you *pick up a cat or a rabbit*, scoop him up under his



Tossing a stick is a form of fun enjoyed by both the dog and boy.

COURTESY THE EQUITABLE LIFE ASSURANCE SOCIETY



Many a do-it-yourself fan engages in household repairs and decorating.

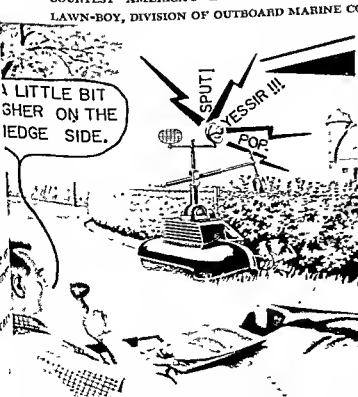
In one recent year, 794 people were injured by power mowers.

An 18" diameter rotary mower, turning 2,500 rpm, generates blade-tip speeds of over 2 miles per minute. If such a rotating blade strikes a rock, it can throw it out with an initial velocity of 120 mph. Before you start to mow, check the area

Born at the right time! Remote-controlled mowing is closer than you think.

- Disconnecting the spark plug wire prevents the motor from starting when you have your hands in the mechanism.

COURTESY AMERICA'S INDEPENDENT ELECTRIC LIGHT AND POWER COMPANIES AND LAWN-BOY, DIVISION OF OUTBOARD MARINE CORPORATION



slaught of the disease. Every bite must be examined by a physician and the animal held for observation by the local health authorities. If the animal gets away, you will have to take a painful series of injections as a preventive measure; otherwise, the bite will be fatal if the animal had rabies.

DO-IT-YOURSELF

The growth of the do-it-yourself trend is remarkable. At a recent large-city do-it-yourself show, more than 107,000 persons visited the exhibits in less than one week.

The need for more instruction in do-it-yourself activities becomes important as many more people move into their hobbies with—far too often—more enthusiasm than preparation. Some insurance studies have indicated that a large proportion of teenagers are using Dad's power-driven equipment at home *without instruction in safe practices*. We need to know correct practices when we use any tool.

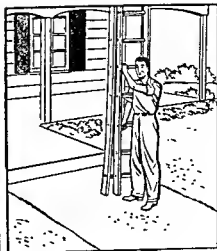
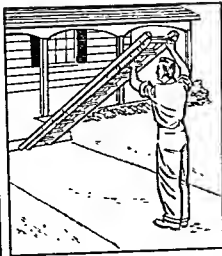
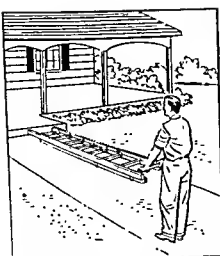
The most important considerations are the proper attitudes, good housekeeping, and using hand tools and powerized equipment properly. See the chapter on school safety.

Power Lawn Mower. A power lawn mower is a wonderful time and energy saver if used correctly; otherwise, it can shorten your hands or feet.



Do-it-yourself home activities are enjoyed by more than 12,000,000 Americans.

COURTESY ROCKWELL MANUFACTURING COMPANY



COURTESY NATIONAL SAFETY COUNCIL

To carry a ladder, brace the lower end against something solid so that it cannot slide. Raise the top end and walk forward under the ladder. When the ladder is erect, reach through and lift it off the ground.

ing. In most civilized countries, humans climb poorly. Once off the ground, they tend to lose their sureness and self-confidence. Height also increases the seriousness of an accident. A fall from a height may cripple or even prove fatal.

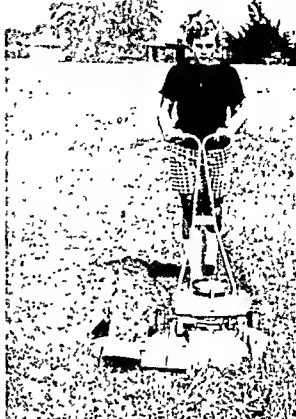
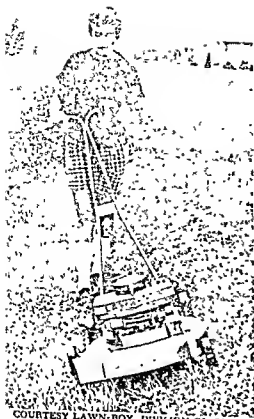
In one recent year, 1200 people were disabled by falls from ladders in one state alone.

Set up a ladder so that the base is about $\frac{1}{4}$ of the total length of the ladder from the base of the object against which it leans.

To be safe, a ladder must extend higher than the roof, as pictured • Note how unsafe it is when the ladder does not extend as high as the roof.

COURTESY NATIONAL COMMITTEE ON BOY'S AND GIRL'S CLUB WORK





COURTESY LAWN-BOY, DIVISION OF OUTBOARD MARINE CORPORATION

When mowing a bank with a rotary mower, head the machine so that the chute points downhill; otherwise, a piece of stone may be thrown out and hit someone who is higher • A protective cover (arrow) can be purchased and installed over the chute to minimize the chances of particles being thrown out.

to be sure that it is clear of rocks, nails, and pieces of debris. Keep other people, especially small children, out of the way.

Be sure you know how to operate the mower correctly and *how to stop it quickly in an emergency*. For perfect control, keep in step with the mower. If you lag behind or let it pull you, you won't be in full command. Cut a sloping area crossways instead of up and down. This will minimize the chances of your losing control and having the mower slide into you or get away.

If you have to work on the blades to clear them of mulch, disconnect the spark plug. Hot gasoline engines are easily started by a slight movement of the blades. Disconnecting the spark plug wire will prevent such an accidental starting.

Some *electric-powered mowers* can give you a shock if used when the grass is wet. Wait until the afternoon, when the sun has dried the grass, before starting to mow.

Ladders. Male members of the house have most of their home accidents while working in and around the yard. Many of these jobs involve using a ladder to put up screens or storm sashes, trim trees, wash windows, repair surfaces, or for paint-

There are right and wrong ways to lift.

COURTESY NATIONAL SAFETY COUNCIL



If you do have to lift a heavy object, get help. *It's a sign of mental strength to size up a job properly.* Then be sure to give a signal for both of you to lift at the same time, so that one person will not start to lift the entire load.

If you do have to lift by yourself, see that you have good footing • Keep your feet as close to the object as possible, and out from under it • Bend your knees and keep your back straight • Lift by *using your leg muscles* • Avoid quick, jerky, or twisting movements • When carrying the load, be sure that you can see where you are going • Take only *small articles* up and down stairs, unless you have a helper and guide.

To set the load down safely, keep your back straight while you lower the object by bending your legs.



To lift properly, straddle the object and bend your large leg muscles. Then raise up, keeping your back straight.

COURTESY AETNA LIFE AFFILIATED COMPANIES



"Reaching too far may cause a bad jar."

COURTESY BOY SCOUTS OF AMERICA

This makes an angle of about 75° from the horizontal. Place the ladder so that it is parallel with the wall and with its feet resting on solid ground. Place a board under the feet if you use the ladder on soft ground.

Face the ladder when climbing it or descending • Keep your hands on the rungs when going up or down • Move the ladder frequently to avoid the necessity of reaching too far, which could throw you off balance.

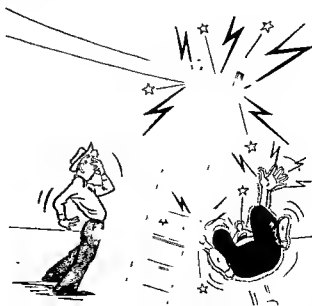
A metal ladder, or any wet ladder on a rainy day, requires special attention because it is a conductor of electricity. While moving it, see that the top does not come close to any electrical wires. Have you noticed electric wires with shredded insulation leading into the house? These are especially unsafe. Stay clear of them. Report to the electric company.

Lifting. Lifting seems a simple thing. However, as a person studies the statistics of people suffering disabling injuries, it seems that most of us need to learn how to lift properly.

Essentially, lifting should be done with the large leg muscles instead of the back muscles, which are relatively weak. A twisted back is no joke; it sometimes hurts for a lifetime.

A metal ladder can give you a jolt if it should touch electric wires. So can a wet wooden ladder.

COURTESY INDUSTRIAL INDEMNITY COMPANY



- striking the match; (b) the match should be struck before turning on the gas; (c) either way is OK.
2. To check for a gas leak: (a) use a searchlight; (b) a match; (c) a water and soap solution.
 3. To prevent the formation of deadly carbon monoxide gas when banking the furnace at night: (a) leave some glowing coals exposed; (b) cover the fire thoroughly with coal; (c) open the vents.
 4. Which of the following safety precautions can save you from a severe shock when you change a fuse: (a) stand on a dry board; (b) use a flashlight; (c) open the main switch?
 5. The best way to keep toddlers from drinking poisonous chemicals used around the home is: (a) teach him how deadly they are; (b) label them properly; (c) lock them up.
 6. The best safety education for a child to find out that fire burns is: (a) scare him; (b) hold his hand close to the heat; (c) keep fire away from him at all times.
 7. Cuts, bruises, and bumps: (a) should be expected as part of the growing-up process; (b) should be treated with honeyed words and sweets; (c) should be completely ignored so the child becomes hardened.
 8. Rotary power lawn mowers often generate blade-tip speeds of: (a) 240 mph; (b) 200 mph; (c) 120 mph.
 9. A ladder should be set up at an angle of about: (a) 75°; (b) 90°; (c) 105° from the horizontal.

True-False

1. It is important that you participate in the safety activities of the home.
2. If you find certain unsafe conditions at home, it is your duty to see that changes are made.
3. Accident prevention and good eating habits have nothing in common.
4. A sharp knife is safer than a dull one.
5. Most falls can be prevented by alertness to the situation.
6. It is a good idea to keep old prescriptions for use when you get the same illness a second time; then it is handy for the emergency.
7. Aspirin, especially prepared for children, is so weak that it cannot be considered a hazardous drug.
8. Fire is seldom caused by defective electrical equipment because the fuse always burns out first.
9. Installing a fuse of higher rating will allow you to install more electrical appliances safely.
10. Dampness increases the severity of an electrical shock.
11. A short circuit always burns out a fuse.
12. Poor housekeeping is the number-one cause of indoor falls.

TOPICS FOR DISCUSSION

1. Why are you expected to participate in the safety activity of the home when you grow into your teens?
2. What is your role, as a member of the family safety council, if your parents object to your suggestions?
3. Develop a check list, through class discussion, of the usual pitfalls that lurk in the kitchen and suggest ways to lessen each danger.
4. Develop a check list through class discussion, of the usual pitfalls that lurk in the bathroom and suggest ways to lessen each danger.
5. Develop a check list, through class discussion, of the dangers of cluttered storage areas and suggest ways to lessen each danger.
6. Why may the plugging in of an extra electrical appliance be unsafe?
7. What is the purpose of a fuse?
8. Explain the precautions to be used in changing a fuse.
9. Why is the use of an oversize fuse dangerous?
10. The degree of shock a person suffers depends on what factors?
11. How can a "third" wire lessen the risk of getting a shock from a piece of portable electrical equipment?
12. Through class discussion, develop a check list of things around the home that could cause falls, and suggest ways to lessen each danger.
13. Why is it desirable to study childhood safety at this time?
14. Through class discussion, develop a check list of things that might be dangerous to a child and suggest ways to lessen each danger.
15. Why do you think so many children die each year from poisoning?
16. Why does a two-year-old get into more difficulties than a baby?
17. Why is it said: "As the child grows, his safety becomes partially his own responsibility?"
18. In what manner should you carry on a child's safety education?
19. Why shouldn't a parent try to prevent all accidents from happening to a child?
20. What safety precautions should be observed in the buying and mounting of a Christmas tree?
21. What are the characteristics of safe toys?
22. Discuss the care you should exercise in handling your dog or cat.
23. Why do do-it-yourself activities point up the need for training in safety?
24. What risks lurk in the improper use of power lawn mowers?
25. Why are falls from ladders usually serious?
26. Describe the correct way to lift an object safely.

SELF-CHECK TESTS

Multiple-Choice

1. In lighting a gas oven: (a) the gas should be turned on before

CHAPTER 4: ON VACATION

Sports and recreation can be both safe and fun—for each member of the family—provided he plays in a safe area, is properly trained, has adequate equipment, and is expertly supervised. It's just like safety anywhere else. If we understand the dangers involved and take the necessary steps to counteract them, then the chance of getting hurt is greatly reduced, and we will have fun. This is *effective safe living*.

One of the least safe places to play is on the streets. It is almost impossible to do two things at the same time and do either one well. If you pay attention to the game, you can't watch for cars. Hard surfaces, curbs, light wires, oily spots, and other objects can cause trouble.

A vacant lot has broken glass, rocks, and ruts to contribute individual risks. *Construction areas* are especially dangerous because steel equipment or blasting caps may have been left

Sports can be fun and safe if you are properly trained, have the proper equipment, and play in a safe area • Playing in the street got the best of this younger sportsman!

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY AND LONG BEACH POLICE DEPARTMENT



13. Because you are past childhood now, it is not important to study children's safety.
14. Lead poisoning occurs most often in children.
15. All deadly chemicals used around the home are marked with a special poison label.
16. The sound of hoiling liquids is disarmingly soothing to a youngster.
17. You must protect a child from all falls.
18. Children are instinctively afraid of water.
19. Parents should keep all children off the streets.
20. The best way to lift up a rabbit is by his ears.

Completion

1. Hot fat spatters when you add _____.
2. _____ and cough syrups are potential "sneaky killers."
3. There are comparatively _____ accidents in the living room.
4. Fire and _____ are the hazards which exist in the basement, attic, and utility room.
5. Fuses are the _____ of an electrical system.
6. In many electrical installations, a _____ replaces the common fuse.
7. _____ lead the list in the number of home accidents; also in the number of deaths and serious injuries.
8. A _____ is helpless and needs complete protection.
9. A baby's safety education must start from the _____ years of his life.
10. Children adopt _____ attitude and copy their behavior.
11. Set up a ladder so that the base is about _____ of the total length of the ladder from the base of the object against which it leans.
12. Lifting should be done with the _____ muscles and not the back muscles.

Matching

- | | |
|-------------------|---------------------------------|
| 1. Volt | 1. Grounding device |
| 2. Fuse | 2. Measurement of electricity |
| 3. Third wire | 3. Protective electrical device |
| 4. Sneaky killer | 4. Poison |
| 5. Lead poisoning | 5. Laxative |
| 6. Insecticide | 6. Hobby |
| 7. Rabies | 7. Paints |
| 8. Do-it-yourself | 8. Infectious disease |



The beach is enjoyed by everyone, of all ages.

WATER SPORTS

Swimming, boating, and water skiing are great sports, but they cause too many accidents.

A good protection against drowning is to use the "buddy" system: Pair off in groups of two; one swims while the other watches from the beach. When one dives, the other checks on his safe return. After a while they alternate. The buddy system assures *immediate* help if it becomes necessary.

Diving into shallow water is often the cause of a serious accident • Going swimming too soon after eating may cause cramps • Undertows may pull a swimmer far beyond his depth.

The best assurance against accidents is to use a supervised beach where expert help and advice are always available. If you are a non-swimmer, and see a swimmer in distress, cry out

It is best to use a supervised beach. Expert assistance is always available.





Younger fellows like to dig caves. What could be the result if the walls collapsed?

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

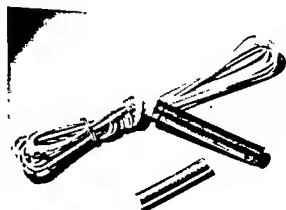
behind. Younger children seem to like to play with these caps, which are small copper or aluminum cylinders as big around as a lead pencil and from 2 to 5 inches long. They contain sensitive explosives which can be set off easily. When a cap explodes, hundreds of small pieces of metal fly out in all directions—sometimes as far as 200 feet. Children who play with blasting caps may be killed, lose fingers or hands, or be blinded and searred.

In one recent year, 137 youngsters were injured by blasting caps.



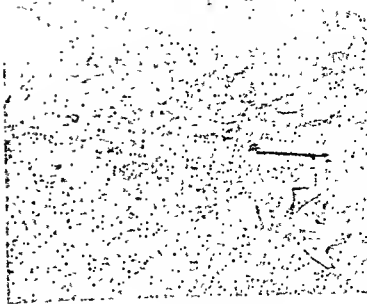
This is the way blasting caps look. If you find anything looking like this, call the police department.

COURTESY INSTITUTE OF MAKERS OF EXPLOSIVES



On Vacation

A danger at the beach is stepping on glass or a lighted cigarette. A good citizen will pick up such items and dispose of them in trash cans so that others will not be injured.



for the life guard. It's a strange human paradox that causes non-swimmers to try to rescue a drowning person. It complicates the life guard's work because then he has *two* people to rescue. However, stand by, so that you are available to assist if needed. The rescuer may be exhausted by the time he reaches shore. He may ask for help.

The techniques of artificial respiration are given in the chapter on First Aid.

In one recent year, 6,100 people drowned.

When you are at the beach, it's best to get your tan slowly. You want a tan that will be the envy of your friends, not a sunburn that will make you an object of pity • Sun yourself only a few minutes the first day and increase the exposure gradually • Use a protective lotion if you burn easily • Be especially careful on a dark day when the sky is cloudy or the air is hazy • Many a bad sunburn has been acquired under just such conditions. A real bad sunburn is very painful and may lead to infection.

BOATING

Millions of Americans make boating the nation's fastest growing participant sport. Your interest may be in fishing, water skiing, or just plain cruising. Whichever is your favorite, the proper knowledge of how to operate on water, under every condition, is a must.

First you must know and abide by the accepted "traffic rules" of the water. Learn your state and national laws for all types of small craft. One general requirement is that you carry

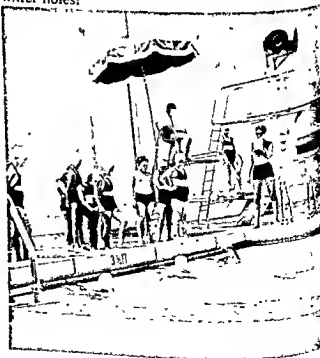
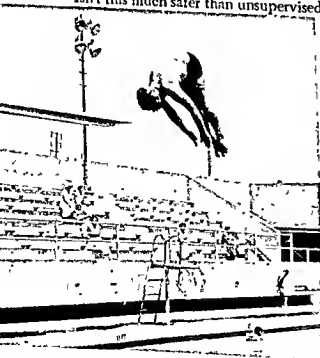


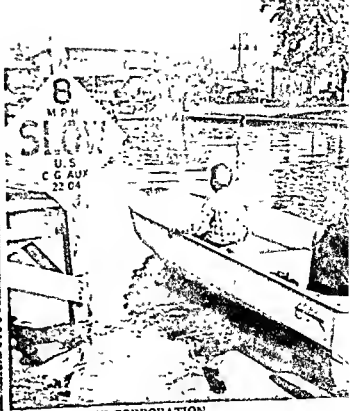
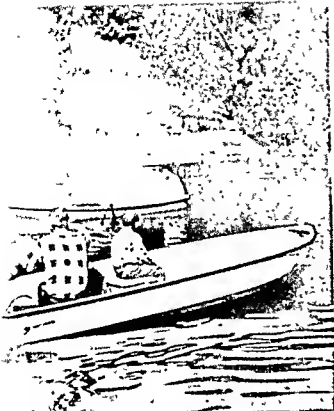
COURTESY BOY SCOUTS OF AMERICA AND AMERICAN MUTUAL LIABILITY INSURANCE CO.

Skin diving takes know-how and the proper equipment. Always go with someone else so that assistance is available should an emergency arise. This is like the "buddy" system for swimmers.

A life-saving technique using an automobile tire. Lifting the drowning person onto the tire removes much of the risk while bringing him in. Supervised beaches are equipped with such aids.

There is a lot of enjoyment in being able to do something well. The right way is the safe way. City and town pools provide experts to teach water sports. Isn't this much safer than unsupervised water holes?





COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

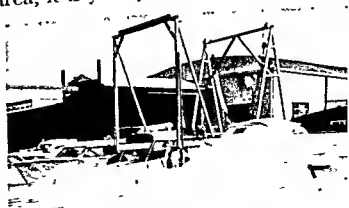
This youngster is getting good safety instruction from his father. The safety-conscious father is pointing out that flat-bottom boats can upset easily; therefore a motorboat should proceed slowly so as to make a minimum wake, and should give rowboats plenty of space • Obey posted speed limit signs. They will protect you from ramming your boat or injuring others in a crowded harbor.

to go. As you turn, the bow makes a small circle, but the stern swings out rather widely. Keep the stern swing in mind when you're in tight quarters.

You are legally bound to observe the *rules of the water* • Sailboats and rowboats have the right-of-way over outboards • Steer clear of smaller boats and slow down so that your wake does not cause them trouble • Make it your job to keep away from larger vessels, because it is easier for you to maneuver.

An area that is roughly from dead ahead of the bow to 112½° off the right (starboard) side is called your *danger zone*. If another boat appears in that area, it is your job to get out of

Always go very slowly when passing docked boats; one might be coming out. Then too, you won't kick up a wake which can cause the docked boats to rock and bump against one another.



COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

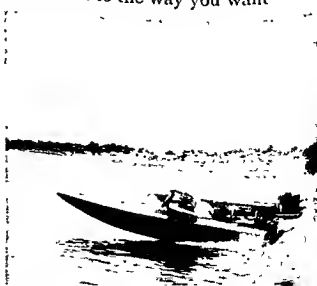
COURTESY GENERAL PETROLEUM CORPORATION
Boating is a major vacation-time activity of many Americans.

a life preserver for each person on board. In addition, your boat must have proper lights and a fire extinguisher, if it has a motor. Nothing in the law says that you have to have an anchor, compass, extra paddle, line, or tool kit; but common sense dictates that you should not leave on any kind of cruise without these vital items.

Until you are older, you should always have an adult person with you if you want to head out to open water. Be sure that you know how the boat maneuvers. Unlike an automobile, a boat turns by pushing on the stern. You turn an outboard by pushing the stern in the opposite direction to the way you want

Notice how this speed expert protects himself with a crash helmet and life preserver. True adventurers take their lives seriously.

COURTESY GENERAL PETROLEUM CORPORATION





Now that he has proved that he wants to learn correctly and safely, he is given the tiller. You are allowed to do more if you prove you are responsible.

COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

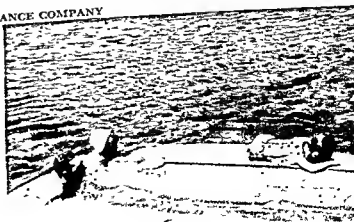
danger zone, you have to slow down or change course to avoid it.

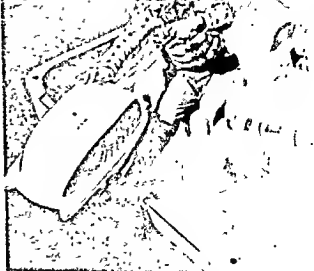
Buoys are the most familiar navigational aids—the signposts of the water. Here's how they work: When you bring a boat into a channel from the open water, the buoys on your *right* are painted *red*, and are *even-numbered* from the mouth of the entrance. Buoys on the left (port) side of the channel are *black*, with *odd numbers*. Stay between the red and black buoys and keep to the right side of the channel.

Common sense dictates that you keep life preservers readily accessible and know how to use them. "Elementary," you say? Not so! Many a boatman never bothers to think about a life preserver until (surprise) he finds himself nose-to-nose with a fish. It's not reasonable to expect small children or non-swim-

Even on calm, sunny days, somebody can tip your boat. Flat-bottom boats capsize easily. Help the non-swimmer on top of the keel; it won't sink • If you all stay with the boat, you will have a better chance of being seen than if someone tries to swim for a distant shore.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY





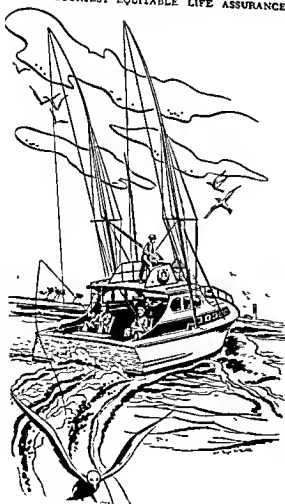
COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

Now that younger brother understands the reasons for water safety, he is learning how to start the motor • Next comes practice in starting the motor. As usual, the safe way is the right way.

his way. If two boats approach head-on, both must change course to pass to the *right*. In the commonest encounter, another boat crosses your bow. As long as the other boat is in your

Deep-sea fishing is another great water sport. Safety, skill, and knowledge go hand-in-hand to make a neat vacation • Expert sail boating always combines know-how with safety.

COURTESY EQUITABLE LIFE ASSURANCE



mers to don a life preserver after they are in the water, so insist that they keep them on at all times while in the boat.

Drowning is the second leading cause of accidental death in the 5-44 age group.

Foul weather always has been, and always will be, the number-one enemy of all boatmen. Before shoving off, check the local weather forecast. Flag signals are displayed at all yacht clubs. The small-craft warning is a triangular flag indicating that winds of up to 38 mph are expected.

WATER SKIING

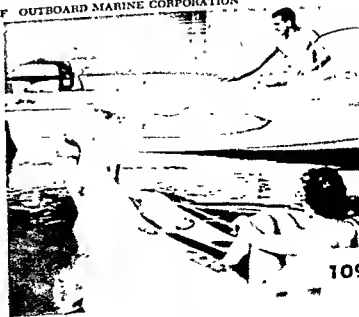
If you can swim, you can learn to water ski. A boat, a powerful motor, tow rope, and skis are what you need to be in business. You probably can ski the first time you try it. Once you have felt the thrill of surging out of the water, the rush of the wake under your skis, and the flying sensation of crossing and re-crossing, swooping and turning, you will be a water-ski fan.

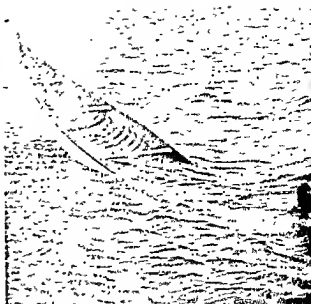
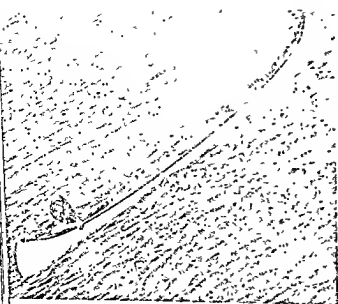
The dangers in water skiing are minor, and usually can be charged to showing-off or improper securing of the tow line. In skiing through rough water, such as when crossing the wake of the tow boat as it turns, your cross path should be as close as possible to a right angle; a little spring at the moment of crossing, and you're through. Of course, skiing in an area where people are swimming is never excusable. The tow rope

To get the feel of water skis, try some dry-land practice first. Keep your arms straight, and then stand up without tugging back on the rope; just like getting out of a chair.

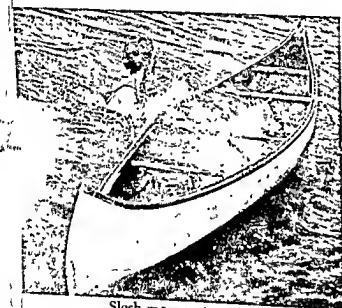
Ready for the take-off. The student is cautioned to keep the tips of her skis above the water, to keep her arms straight, and not to pull backwards on the rope.

COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION





If you tip a canoe over, stay with it. Practice learning to right it in shallow water. Stow the paddle under the thwarts so it can't float away • The first step is to depress the bow so that much of the water runs out.



Slosh more water out by rocking the canoe from side to side. By timing the movements correctly, most of the water can be removed • To enter the canoe, distribute your weight across both sides as much as possible.

Then twist as you tumble in • Now you're safely off for further fun—the result of know-how.



CAMPING

Camping can and should be a very enjoyable vacation experience. Most of the really dangerous wild animals are under control. With just a little knowledge and care, you can learn to enjoy the out-of-doors like a real frontiersman instead of a tenderfoot.

Proper dress is important. A good pair of stout boots protects your legs from the sting of thorns, mosquitoes, and possible snake bites. A *rain slicker* will protect you from sudden downpours.

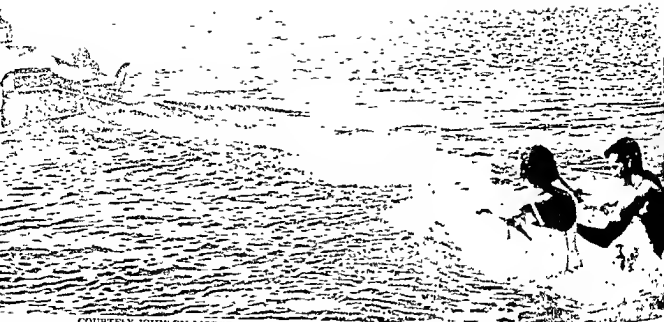
Falls often occur while we are camping. Unfamiliar footing, loose rocks, and the pitfalls of the forest floor make caution highly advisable • Be sure you know where you are going and take a flashlight to light the way at night • "Look before you leap."

Campsite Precautions

If you use a tent, locate it on high ground. Low ground and dry river beds may become raging torrents of water in the event rain falls in nearby mountains • Make a trench around the

To signal for a turn, hold your palm vertical with a curving motion of your hand, in the direction desired • "Back to dock"—point with your finger outstretched and make a downward motion of the arm • To stop, raise your hand high • To cut the motor, draw your finger across your windpipe.





COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

As the boat begins to move, slide forward on the skis until you are sitting against your ankles. Now with your arms straight, stand up slowly.



Keep your knees slightly bent as you come to a standing position, so as to absorb the shock of the water. And away you go!

COURTESY JOHNSON MOTORS, DIVISION OF OUTBOARD MARINE CORPORATION

has a pull bar for you to hold onto with your hands. If you secure the rope to your body, you will be dragged under the water in the event of a spill.

A water skier must learn to signal correctly. The palm up, with an upward motion, means faster • The palm down, with a downward motion, means slower • Third, is the signal that the speed is O. K.

WATER SKI SIGNALS, PAGES 110, 111, COURTESY OUTBOARD BOATING CLUB OF AMERICA





COURTESY LONG BEACH POLICE DEPARTMENT

Practice makes perfect.

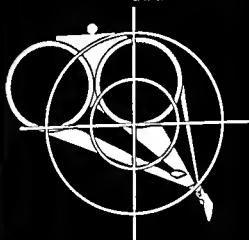
inevitable. Boys and girls are old enough to handle firearms from the age of 12 years on, *provided they show a sense of responsibility and are willing to train in the safe use of firearms, according to the National Rifle Association.*

Hunting is one of our greatest participant sports. It is a very healthful hobby; it sharpens our perception and, from our experiences in the field, we learn to appreciate the wonders of nature.

Check your "line of fire." Someone may be part of the target.

COURTESY THE MARLIN FIREARMS COMPANY

**BE SURE OF YOUR
TARGET..**

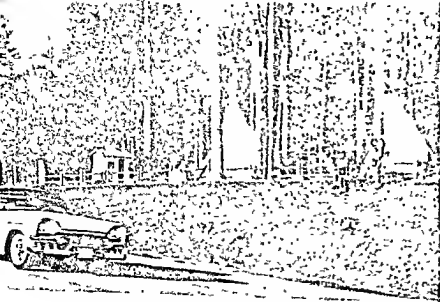


before you fire!

WATCH THAT MUZZLE

COURTESY SPORTSMEN'S SERVICE BUREAU

On Vacatio



Camping has been handed down to us from the American Indian. Some good camping sites can be reached by car.

COURTESY GENERAL PETROLEUM CORPORATION

tent to keep rain water from pouring in • Place the tent in an area clear of dead trees which might fall should high winds spring up • *Return to camp* when dark, ominous clouds approach; a storm may be in the making • Then check to see that the tent rope pegs are driven tightly into the ground to prevent the wind from blowing the tent away • Be sure that ropes are not too tight; wetness shrinks rope, and a tight rope will pull a peg from the ground • Fasten the tent flap ties securely to minimize the chances of a strong wind blowing inside of the tent and lifting it from the ground.

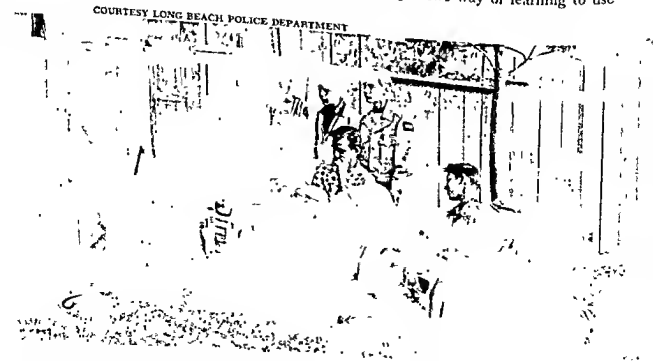
HUNTING

"Pop, can I have a gun?"

When a boy asks his dad for a rifle the answer is often an explosive, "*No—never!*" And yet, this answer only puts off the

The police department frequently assigns an officer to work with groups who are interested in guns. This is the responsible person's way of learning to use a gun.

COURTESY LONG BEACH POLICE DEPARTMENT



Before putting the gun into the car, remove the ammunition *and* the bolt. In some states, the gun must be cased.

COURTESY THE MARLIN FIREARMS COMPANY



In many states, it is against the law to carry a loaded gun in an automobile. Every year, people are injured or killed when they carelessly take a loaded gun from an automobile or when the gun is discharged as it falls from the seat during a sudden stop.

All hunting casualties are the result of carelessness, ignorance, or both!

THE "TEN COMMANDMENTS" OF GUN SAFETY

The following Commandments were suggested by the Sportsmen's Service Bureau:

1. Treat every gun with the respect due a loaded weapon. This is the first rule of gun safety.

2. Guns, carried into camp or home, or when otherwise not in use, must always be unloaded and taken down or have their actions open. Guns should be carried to the shooting area in cases.

3. Always be sure that the barrel and action are clear of obstructions, and that you have only ammunition of the proper type and size for the gun you are carrying • Remove oil and grease from the chamber before firing.

4. Always carry your gun so that you can control the direction of the muzzle—even if you stumble • Keep the safety on until you are ready to shoot.

Carry your gun so that the muzzle points away from your partner.

COURTESY THE MARLIN FIREARMS COMPANY



On Vacation

This fall, more than 17,000,000 Americans will enjoy one or more days afield with gun and dog.

According to statistics, accidental discharges—resulting from carelessness in handling and storing firearms—are responsible for more fatalities than are actual shots while hunting. The unfortunate thing is that many of these accidents do not affect the hunter himself but only the innocent victim and the victim's family.

Over 2,500 persons are needlessly killed each year because someone didn't know how to handle a gun or was willing to take a chance while handling or carrying it.

The first step whenever you handle a gun is *to assume it is loaded* • Point it in a safe direction and examine it to be sure the gun and magazine are empty • Then check to see if the bore is open • If the gun has a tubular magazine or clip for cartridges, withdraw the tube or clip and examine it to be sure there is no concealed cartridge which might be freed by a sudden jar • Store or carry it in a way that cannot harm anyone, even if loaded.

When you go hunting, wear a bright color. Avoid white because you may be mistaken for game; the tail of a deer is white. Yellow and orange are better colors than red because 5% of the 17,000,000 hunters expected in the field this year (or 850,000 of them) will be *colorblind to red* and, therefore, cannot see this color clearly.



Wear bright-colored clothing for your own protection. Keep hunting a safe sport.

COURTESY SPORTSMEN'S SERVICE BUREAU

CROSS THAT FENCE SAFELY



KEEP HUNTING A SAFE SPORT

COURTESY SPORTSMEN'S SERVICE BUREAU

One partner keeps the guns and hands them to the other before following him through a fence. If you are hunting alone, put the rifle on safety, and then place it on the other side of the fence before crawling through.

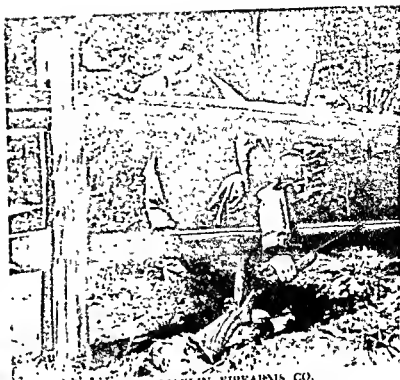
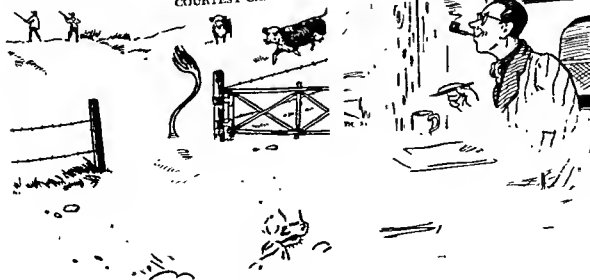
8. Unload your gun before you climb a fence or jump a ditch • Pull your gun toward you by the stock, never by the muzzle.

9. A bullet shot at a flat hard surface, or the surface of water, may ricochet or glance off at an unexpected angle. Avoid this always. When at target practice, be sure that your backstop is adequate.

10. Hunters should avoid alcohol before or during the shoot. This warning does not affect you now, but may mean a great deal someday.

Lock all gates after you! Also, a thank-you note is welcome to the man who allows you to hunt on his land.

COURTESY CALIFORNIA STATE DEPARTMENT OF FISH AND GAME



COURTESY THE MARLIN FIREARMS CO.



COURTESY CALIFORNIA STATE DEPARTMENT OF FISH AND GAME

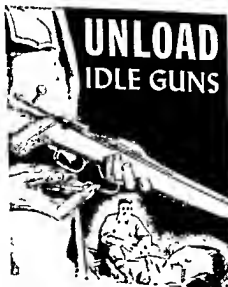
Look twice, man; something's wrong here!

A fool and his friend's life are soon parted!

5. Be sure of your target before you pull the trigger • Know the identifying features of the game you intend to hunt.

6. Avoid pointing the gun at anything you are not going to shoot; horseplay of any kind is certainly childish when a loaded gun is around.

7. Unattended guns should be unloaded; the guns and ammunition should be stored separately beyond the reach of children and careless adults.



An unloaded gun cannot accidentally discharge. Keep hunting a safe sport.

COURTESY SPORTSMEN'S SERVICE BUREAU

On Vacation

The International Air Rescue Symbols must be marked at least 10 feet high.

your absence is not going to be noticed until after dark, you may have to find your way alone • Try to travel in a single direction. This is best accomplished by using a compass or the sun as guide. • Following a stream is good because it frequently leads to human habitation.

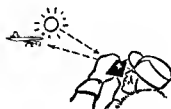
To communicate with *rescue planes*, lay out the International Air Rescue Symbols on the ground. Use any material that will make a good color contrast with the background. The symbols should be at least 10 feet high.

A pilot will rock his plane's wings from side to side to indicate that your ground signals have been understood. If they are not clear, he will make a complete right-hand circuit. Be sure to erase the symbols after contact has been made.

No	MEANING	SYM
1	REQUIRE DOCTOR SERIOUS INJURIES	I
2	REQUIRE MEDICAL SUPPLIES	II
3	UNABLE TO PROCEED	X
4	REQUIRE FOOD AND WATER	F
5	REQUIRE FIREARMS AND AMMUNITION	<<<
6	REQUIRE MAP AND COMPASS	O
7	INDICATE DIRECTION TO PROCEED	K
8	AM PROCEEDING IN THIS DIRECTION	↑
9	PROBABLY SAFE TO LAND HERE	Δ
10	REQUIRE FUEL AND OIL	L
11	ALL WELL	LL
12	NO <i>negative</i>	N
13	YES <i>affirmative</i>	Y
14	NOT UNDERSTOOD	JL
15	REQUIRE ENGINEER	W

Sighting Through a Can Reflector

A cross-shaped hole, cut in a shiny can top, makes a good reflector to attract the attention of a plane.



The "sun cross," coming through the hole and shining on your face, will be reflected in the side closest to you. While keeping the plane in sight, move the shiny object so that the reflected cross of light is over the cross-shaped plane. The beam from the sun will then be aimed directly at the plane.

POISONOUS PLANTS

Any field may contain certain poisonous plants which cause a stubborn rash or blisters. These plants are: poison ivy, poison



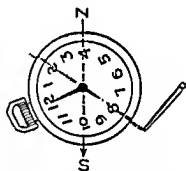
If you are lost, climb to the nearest high point to see further.

COURTESY NATIONAL SAFETY COUNCIL

FINDING YOUR WAY

Getting lost is one of the dangers of traveling in the woods where there are no direction markers. Getting lost is not hopeless unless you lose your head as well as the way. Giving way to panic often causes you to rush wildly in any direction, getting you in a worse position and resulting in complete exhaustion.

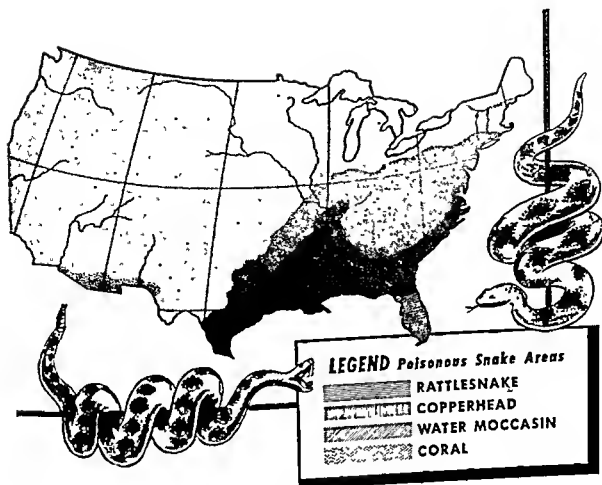
A watch may be used as a compass if the sun is shining. Hold a match or twig upright at the edge of the watch. Turn it until the shadow of the twig falls directly along the hour hand. South will be halfway between the hour hand and the number 12.



Prevention is the best medicine • Carry a compass and map of the area • Note distinctive landmarks (mountains, streams, and roads) and compare them with your map *before starting out* • Keep within close sight of others.

If you do get lost, stop and rest while you think things out • Build a fire if it's cold or dark, but build it where it can do no harm, in a sheltered clearing away from wind or rain • No doubt, the rest of your party will soon be on the hunt for you. Try to put up a smoke signal to guide them • A single periodic yell will attract as much attention as prolonged screaming; and you'll last longer that way too. Then, too, when you're quiet, you can hear the calls of the rescue party • If you have a gun, fire three shots straight up in quick succession; this is the hunter's SOS signal.

If you are lost, it is best to wait, not wander. However, if



COURTESY NATIONAL SAFETY COUNCIL
Poisonous snake areas of the United States.

snakes can be classified as: the rattlesnake, copperhead, water moccasin, and coral snake.

Many snakes cannot stand the heat of day, so they hide in rock piles during the daytime and prowl at night; therefore carry a strong flashlight when walking through fields or woods in the dark • High leather boots reduce the risk of snake bites because 75% of all bites are below the knee.

The *symptoms of a poisonous snake bite* are: two small puncture wounds (it may be a single puncture if a fang is broken) bleeding, burning, rapid swelling, nausea and vomiting, rapid pulse, low blood pressure, and discoloration starting at the wound and spreading rapidly. The bite of a non-poisonous snake leaves a series of small scratches in the shape of a horseshoe.

Snake venom travels slowly through the lymph spaces under the skin, and so fatal effects do not usually occur before 24

oak, and poison sumae. The only sure way to avoid contact with these plants is to learn to recognize them.

Poison ivy grows in the eastern and central portions of the United States. The shrub-like plant usually reaches a height of from one to three feet. The climbing kind grows as a vine, trailing over the ground, rocks, and fences.

The leaves of the plant always grow in a series of *three to each stem*; they are a shiny green and generally *egg-shaped*. The underside of the leaves is *downy*. The flowers, which appear in late spring, are clusters of *greenish-white blooms*, followed by *waxy-white berries*.

Poison oak is really an ivy, of which there are several species. They may grow as shrubs, climbing vines, or as trailing plants. Like poison ivy, the foliage grows in series of three leaves to each stem. The leaves are darker in color and more irregular in shape than the leaves of poison ivy. They also have longer pointed teeth along the edges and are somewhat hairy.

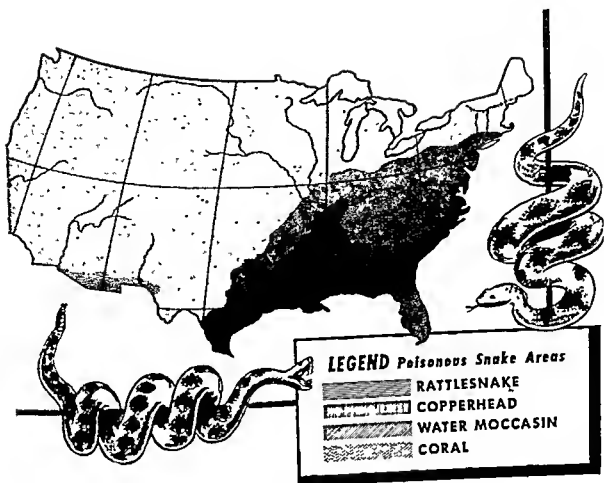
Poison sumae is the most annoying of the three poisonous plants. It is a small, tree-like plant, the growth of which is restricted to the *margins of swamps and bogs*. Its leaves are *long, narrow, and pointed*. They grow in various numbers along the stem, but always in *pairs*. A single leaf grows out from the end of each stem.

Simply coming near to any of the plants will *not* cause poisoning. You can be poisoned, however, by touching a person, animal, clothing, or tools which have come in contact with the poisonous sap. Even the smoke of the burning plant contains the irritant.

The best treatment consists of washing the skin with alcohol, if it is available, and then use a strong soap and hot water *immediately* following contact. If the infection is severe, it should be treated by a doctor as soon as possible.

SNAKES

Snakes will not attack if they have a chance to escape; give them every opportunity to escape by standing still. Poisonous



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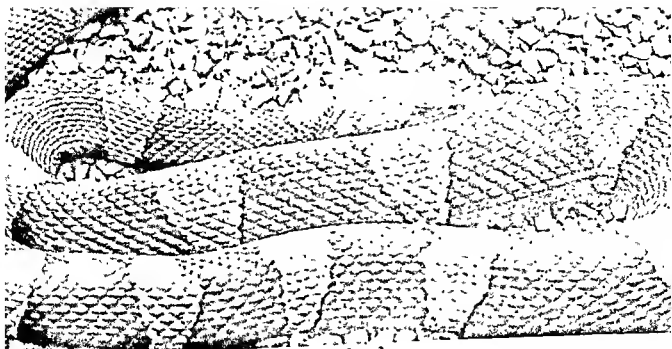
Poison sumac is the most annoying of the three poisonous plants. It is a small, tree-like plant, the growth of which is restricted to the *margins of swamps and bogs*. Its leaves are *long, narrow, and pointed*. They grow in various numbers along the stem, but always in *pairs*. A single leaf grows out from the end of each stem.

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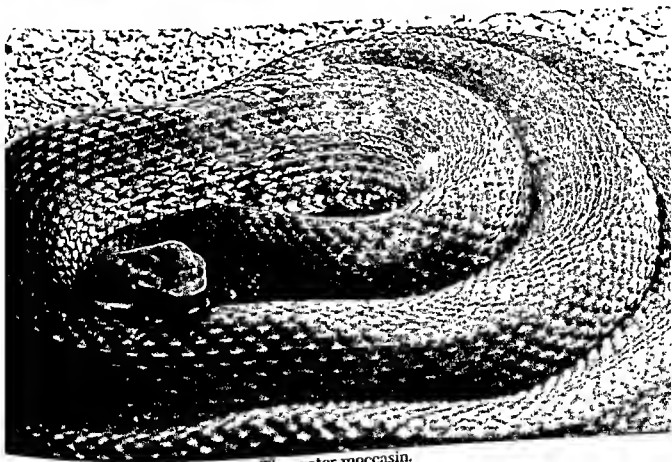
The best treatment consists of washing the skin with alcohol, if it is available, and then use a strong soap and hot water *immediately* following contact. If the infection is severe, it should be treated by a doctor as soon as possible.

SNAKES

Snakes will not attack if they have a chance to escape; give them every opportunity to escape by standing still. Poisonous



The copperhead.



The water moccasin.

The coral snake.

hours. Therefore the victim should be carried to a physician as quickly as possible. He should not be allowed to walk, as physical exertion speeds the spread of the venom. The severe pain and emotional reaction are likely to cause *shock*. Treatment is discussed in the chapter on First Aid.

Identifying Snakes

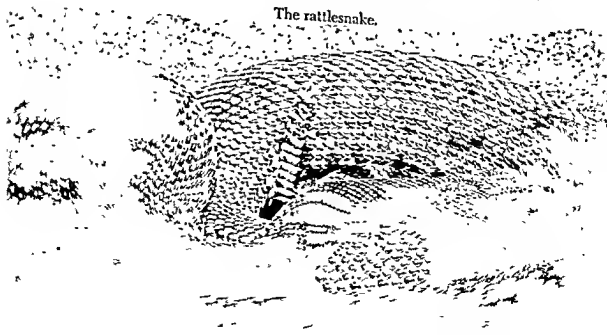
Each of the twenty-one varieties of *rattlesnakes* has its own characteristics as to color, size, and habits. Each has, however, a rattle at the end of the tail with which it gives a warning when disturbed.

The body of the *copperhead* is pale brown, pinkish, or light reddish brown, with a series of large blotches on its sides somewhat like inverted Y's. These markings are usually of a chestnut brown • The snake's head is copper colored • The snakes exude a musky odor • They are 3 to 4 feet in length.

The *water moccasin* lives in water • It is a large snake, growing to about six feet • The colors are dull brown or olive, crossed with darker, usually faintly marked bands • The areas around the mouth are white; hence the nickname "Cottonmouth."

The *coral snake* is slender, with smooth, glossy scales • The coloration is composed of brilliant rings of red, yellow, and black • The reptile is usually under three feet in length.

The rattlesnake.





COURTESY U. S. FOREST SERVICE

A forest fire is a fearsome thing. At right is all that's left of a beautiful forest after a fire.

Forest Fires

A forest fire destroys, in a few hours, hundreds of years of timber growth and many wild animals. But the long-range damage to the watershed (ground storage of water) is probably the most destructive of all. Cover plants do not grow, erosion results, and the land becomes barren.

During the dry seasons, several million acres of farmland, grassland, forest, and woodland are at the mercy of all those who pass through. Enjoy them, use them, but do *your* bit to prevent fires. While many fires are caused by lightning, the most frequent single cause is the careless use of fire by smokers and campers. The thoughtless flipping away of a lighted match, a cigarette, or a piece of broken glass, on which the sun's rays could focus, may cause a fire. To protect our na-



Many wild animals are burned to death by a forest fire.

COURTESY U. S. FOREST SERVICE



He lives in the great out-of-doors, unspoiled by litterbugs.

COURTESY GENERAL PETROLEUM CORPORATION

CONSERVATION OF NATURE

While conservation is not the subject of this book, it is so closely allied to the activities of the camper that a short discussion is in order.

Whether you spend time camping in the lonely fastness of the mountains or merely take your recreation in the form of an occasional Sunday picnic in an urban park, you carry with you an obligation to your fellow citizens which will be fulfilled only if you remember that the out-of-doors is a heritage to be shared by everyone. If you are a good American, you will do your utmost to pass on this great heritage unmarred for those who follow you. No scenery can be beautiful if it is littered with cans and trash.

National parks are controlled by regulations governing the disposal of refuse. A severe fine may be imposed upon persons failing to comply with the regulations.

All burnable refuse should be disposed of before breaking any camp • Have a good hot fire going and make sure that every scrap is burned • Then dig a hole and bury the ashes • Bury tin cans and glass jars in a deep hole • Then fill the hole with earth • Throw a few rocks on top to discourage wild animals from digging the stuff out.

Nature made the woods and fields clean and refreshing—let's keep them that way! Let it not be said of you: "All was beauty here before he came."

the woods ablaze • When you are ready to turn in for the night, extinguish the glowing embers by quenching with water • Spread the remains to find hot spots which should be covered with earth. A brisk wind can restart a smoldering fire while you sleep.

WINTER SPORTS

Winter sports are fun, but the many serious accidents which occur to coasters, skaters, and skiers are sad—and unnecessary. Why not talk the following tips over with the members of your family from junior, with his first sled, to grandpa, who wants to show the young people that he can cut a figure eight (just the way he did 25 years ago)?

Falls, and breaking through the ice, occur frequently in ice skating. Because the ice is hard and your bottom soft, unexpected landings are seldom dangerous, unless you fall on your head or arm. In that event, you may crack your skull or break a bone.

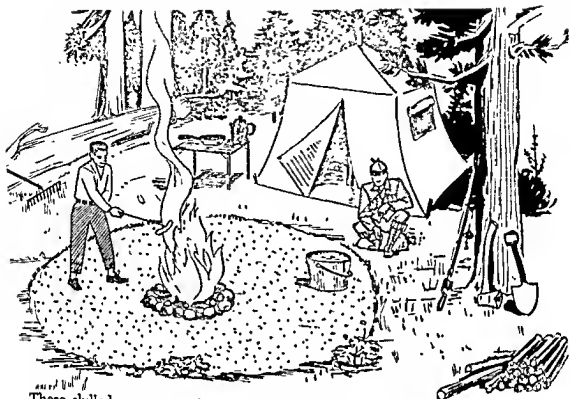
The best way to avoid falls is to keep from showing off. Keep your speed down and learn fancy skating by degrees, not all at once. Use judgment in doing only those things you can learn in one more step.

Breaking through the ice is a real, and always present, danger, unless the pond is in a supervised area and pronounced safe by experts. Keep away from places in which water is entering or leaving the pond. Swiftly flowing water does not freeze as solidly as quiet water.



Winter is for the young-at-heart.

COURTESY LIBERTY MUTUAL INSURANCE COMPANY



These skilled campers took four safety precautions in making their campfire. Can you spot them?

tional resources, forest rangers say everybody who uses our national forests should practice the following habits: "Crush cigarette butts! Break used matches in half! Drown out and thoroughly bury camp fires before leaving! Use the ash tray in the car!" Do you think these regulations are good ones?

Camp fires pose a special problem • First, a campfire permit is required if you are in a national forest • If you are on private land, you must have *written* permission from the landowner • Next, select the site with great care • Clear a space, at least 10 feet in diameter, of all combustible material • Build a ring of stones around the fire and dig up the earth around it for about one foot • Keep a bucket of water within easy reach • Keep a shovel handy, too.

In one recent year, we had 200 forest fires each day!

Build a small fire so that you can keep it under control • If the grease in the frying pan catches on fire, drop it into the flames instead of throwing it away—otherwise, you might set

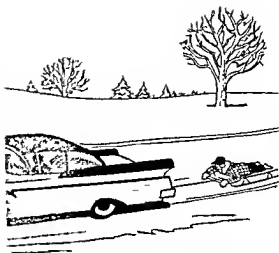
thin ice at the edge of the hole, a rescuer should extend a long plank, a ladder, or a tree branch for the victim to grab hold of; or he can crawl out on a wide plank or ladder to pull in a helpless victim. The wide plank distributes a person's weight over a larger area.

TOPICS FOR DISCUSSION

1. Discuss the term *effective safe living*.
2. Discuss the dangers of playing on the streets; in empty lots.
3. Where is the best place to play?
4. Describe the buddy system.
5. In the event a person is drowning, what is the duty of a non-swimmer?
6. What safety devices should you carry in a motorboat?
7. What are the right-of-way rules for boating?
8. What are the fundamentals of water skiing?
9. Why does camping take study by a tenderfoot?
10. What type of protective clothing is desirable when living in the out-of-doors?
11. Why is it that parents are fearful when a boy asks for a gun?
12. Discuss the details of a "plan of action" which you can use to convince your parents of your sense of responsibility.
13. What is the first step in handling a strange gun?
14. Discuss the problem of red-color-blind hunters in the field.
15. Why is it dangerous to carry a loaded gun in a car?
16. Discuss each of the ten commandments of gun safety.
17. Why is it said: "Prevention is the best medicine against losing your way in the woods?"
18. What three types of signals are discussed which can be used by a hunter who is lost?
19. How can you communicate with an air-rescue plane?
20. How can you attract the attention of an air-rescue plane?
21. What are the four types of poisonous snakes?
Describe each one.
22. What are the three types of poisonous plants?
Describe each one.
23. Discuss why you think conservation is a subject that should or should not be covered in a book on safety.
24. What care is necessary to lessen the danger of forest fire?
25. What hazards are there in winter sports?
26. What is the best way to prevent falls on ice?
27. How can you predict areas of thin ice?
28. Discuss the procedures suggested for rescuing a person who has broken through the ice.



What is the danger here?



What could happen if the motorist should stop quickly?

What could happen if a snowball should strike the windshield of the oncoming car?



THREE DRAWINGS, COURTESY NATIONAL SAFETY COUNCIL

ICE RESCUES

You can be the best swimmer in the world, but you are in great danger if you fall through the ice. The numbing cold soon reduces your strength, and your water-soaked clothes reduce your ability to stay afloat. The thin ice crumbles at the edges under your weight as you try to get out.

The thin ice hampers a rescuer who also may break through as he approaches. To keep himself a safe distance from the

CHAPTER 5: ON THE JOB

You should be interested in safety at work. Even though you are now attending school full time, you may soon be working part-time to earn extra money. It won't be very long before you will be working full time. And, too, many of you will work during the summer months when school is not in session. One-third of each day, for most of the years of your life, will be spent in earning a living. Whether you think of work as a grind, or

On a newspaper route, practice cycle safety at all times.



If you work in a grocery store stacking stock, be careful in handling glassware. Keep aisles clear. Practice the correct lifting techniques when carrying heavy stock or bulky packages.



SELF-CHECK TESTS

Multiple-Choice

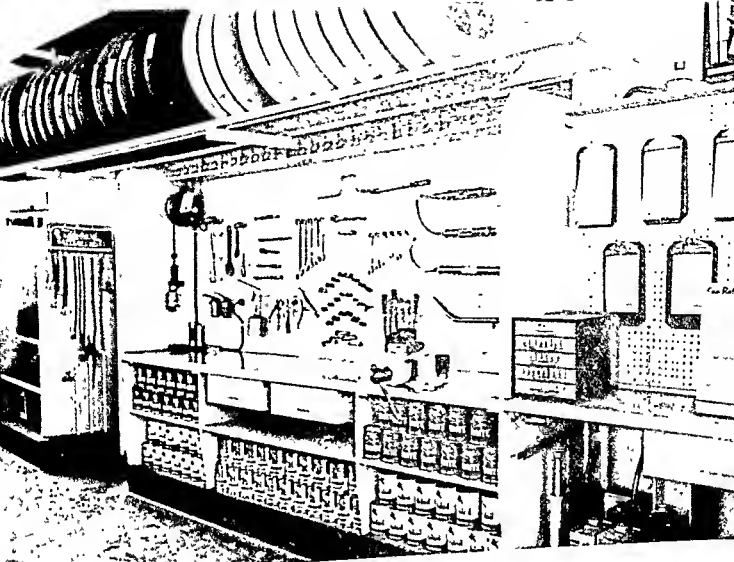
1. (a) 137; (b) 246, (c) 731 children were injured by blasting caps in one year.
2. (a) 2,500; (b) 250; (c) 25 people are killed by guns each year.
3. The hunter's SOS signal consists of firing: (a) 6; (b) 4; (c) 3 shots in quick succession.
4. To acknowledge that he has understood your ground signals, a pilot will: (a) make a left-hand turn; (b) make a right-hand turn; (c) rock his wings from side to side.
5. The water moccasin snake is frequently called: (a) copperhead; (b) cottonmouth; (c) coral.

True-False

1. You cannot get sunburned on a hazy day because the sun is obscured.
2. All boats are required by law to carry a compass.
3. The stern of a motorboat swings in the opposite direction to which you want to go.
4. Outboards have the right of way over sailboats.
5. The only dangers in water skiing are from showing-off and improper securing of the tow line.
6. For security, the tow rope must be tied around your body when water skiing.
7. Every boy should be allowed to have a gun—it's an American heritage.
8. Following a stream, if you are lost in the woods, frequently leads to human habitation.
9. Coming close to poison ivy will cause a rash.
10. The commonest symptom of a snake bite is the two small puncture wounds.
11. Swiftly flowing water does not freeze as solidly as quiet water.
12. To make a rescue of a person who has broken through the ice; use a wide plank to distribute your weight over a greater area.

Completion

1. The best protection against drowning is to use the _____ system, by which youngsters pair off in groups of two; one swims while the other watches.
2. If two motorboats approach head-on, both must change course to pass to the _____.
3. _____ are navigational aids—the signposts of the water.
4. _____ is a safer color than red to wear when hunting.



COURTESY GENERAL PETROLEUM CORPORATION

Good housekeeping is important in preventing slips and falls. This company-owned service station is a fine example to follow.

sweeping compound or flooded with water and cleaned with a squeegee.

If a fire does start, keep the hose in the tank to minimize the spread of gasoline and flame. Fight the fire with a dry chemical, carbon dioxide, or foam extinguisher; water will spread the flame and, therefore, must not be used.

Good housekeeping is very important in preventing slip-

I BELIEVE I AM IN
AN EXCELLENT POSITION
TO STATE THAT OIL
ON THE FLOOR
CREATES A VERY DEFINITE
SLIPPING HAZARD!

Crepe-rubber soles on your shoes "help" you to slide on oil or gasoline.

COURTESY NATIONAL SAFETY COUNCIL

expect to enjoy it, it's still one of the most important factors in your life.

In industrial accidents, 15,000 people are killed and 2,000,000 injured each year.

SERVICE STATION WORK

Young boys may help their dads, or work by special permit, in the summer, after school, and on weekends in service stations. Service station work is not particularly hazardous in spite of the flammable liquids, because operators have learned to take the proper precautions. The value of safety training is clearly evident in the fact that twice the number of fires, percentage-wise, occurs in churches as do in service stations.

Other kinds of work demand special precautions, but this will serve as an example of the need to check safety points wherever you work.

If you go into this type of work, follow these safety precautions: Make sure that your customer has turned off the engine before you start pumping gasoline. This is a law in many states to minimize the chances of fire • Caution a customer with a lighted cigarette that it is against the law to smoke while the tank is being filled. Keep the metal hose nozzle in contact with the tank during the filling operation to prevent the building up of static electricity • Use a gallon container to fill the gas tank of a motorcycle or scooter because the delivery hose pumps fuel too fast for small tanks, and might cause dangerous spillage. If gasoline does spill, the area should be dried with an absorbent



When you are employed at a service station, you learn the safe handling of flammable liquids as part of your training.

developed from recommendations of the National Safety Council, the U. S. Department of Labor, and the Indiana Board of Health.

BABY-SITTER'S FACT SHEET
(Take copy with you on each job.)

Parents' name _____ Baby's name _____
Parents' home address _____ Phone _____
We will be at _____ Phone _____

IF YOU NEED HELP:

1. In case of fire:
 - a. Get the baby out of the house.
 - b. Call the fire department—phone number _____
Fire-alarm box is located at _____
 - c. Use a fire extinguisher *only if the fire is small.*
The extinguisher is located at _____
2. In case baby gets seriously sick:
 - a. Call the fire department first-aid squad at _____
 - b. Call our doctor at _____
 - c. If you can't get either one, call our neighbor Mrs. _____
_____ who lives _____ houses away at _____
_____ St. Her phone number is _____

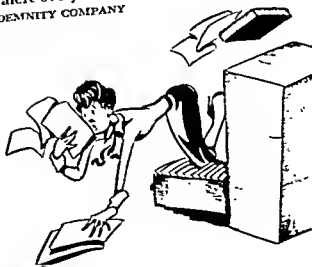
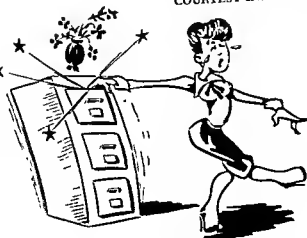
GENERAL INSTRUCTIONS:

1. Keep the doors locked at all times.
2. Keep the phone line open. No private calls, except for emergency.

SPECIAL INSTRUCTIONS:

1. Meals: _____
2. Sleep: _____
3. Bath: _____
4. Play: _____

Ouch! You have to be alert every minute.
COURTESY INDUSTRIAL INDEMNITY COMPANY



ping, tripping, and falling. Keep water and air hoses, jacks, and tools off the floor. There should be a place for everything, and everything should be kept in its place.

Pressurized-type cooling systems sometimes develop extreme pressures. Removing the radiator cap of an overheated engine may scald you unless you take the proper steps. (1) Turn the cap counterclockwise until a stop is felt; this allows the pressure to vent down. (2) Then you can remove the cap safely. (3) Pour water slowly into an overheated engine; otherwise, you may crack the block. (4) Keep the engine idling to maintain circulation.

BABY SITTING

As a baby sitter, someday you will have a real responsibility. Most of the time you may "take it easy;" however, you must be prepared to cope with emergencies. The parents expect you to make intelligent decisions in the event of an unforeseen occurrence. They place the life and well-being of their small children in the baby-sitter's hands.

One firm decision is to make only necessary telephone calls. When you talk to a friend on the phone, your attention is distracted from the children as well as tying up the phone for incoming calls, which might be very important.

Inasmuch as the baby sitter may not be too familiar with the family, the house, and the neighborhood, it is important that she get sufficient information to help her make the correct decisions in the event of an emergency. To assist in this matter, the following form may be duplicated by the school so that a copy is available for each girl taking a baby-sitting job. It was



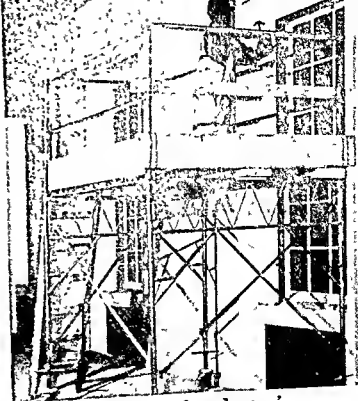
When alone, keep door chain in place, if there is one; otherwise, keep the door locked to all callers. Notes can be slid under the door or placed in the mail slot.

COURTESY NATIONAL SAFETY COUNCIL

n the Job

Industrial accidents have declined greatly because of active interest in safety for the worker. Note the use of firm scaffolding to minimize the chances of falling.

COURTESY AETNA LIFE AFFILIATED COMPANIES

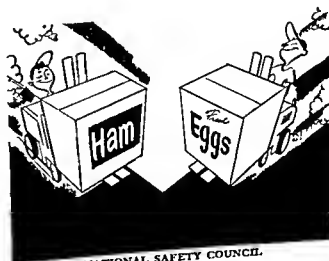
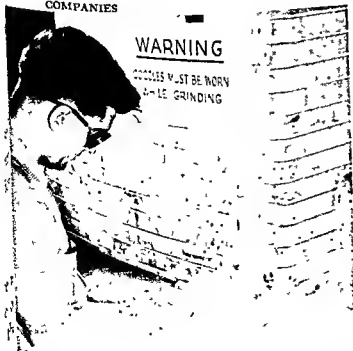


accident death toll has been cut in half. Much of industry's success has been due to intensive union and management safety campaigns, the workers' increased safety consciousness, and an improvement in housekeeping, machine guards, lighting, and other working conditions.

Most large industrial organizations have a safety department headed by a trained safety engineer. He promotes

Industries make it a rule that goggles must be worn while grinding so that foreign particles do not enter the eye. Hoods are used in welding; metal helmets in places where objects might be dropped from above.

COURTESY AETNA LIFE AFFILIATED COMPANIES

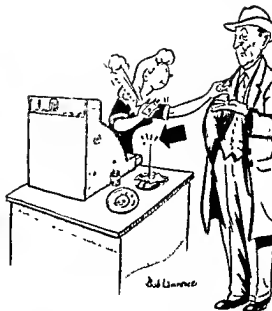


COURTESY NATIONAL SAFETY COUNCIL.

Humorous posters always carry a real message, and attract interest in safety.



A cheap "hangover."



COURTESY INDUSTRIAL INDEMNITY COMPANY

Do you think she'll get the point?

Handling stock can be dangerous when you stand on makeshift devices. Use a step ladder.

COURTESY AETNA LIFE AFFILIATED COMPANIES

OFFICE WORK

The office is considered safe. Yet the same precautions used in the home and at school apply; otherwise accidents can occur. Good housekeeping plays an important part in the prevention of accidents.

INDUSTRIAL SAFETY

One of the brightest spots in the entire accident picture is the success achieved against accidents in industry. In spite of the greatly expanded labor force in the past twenty years, the

mize the effects of injuries. It is a worker's responsibility to report to the first-aid station for each injury—no matter how small. It is better to waste antiseptic than to lose a finger through infection.

TOPICS FOR DISCUSSION

1. Why should you be interested in work safety now, while you are going to school full time?
2. Why is baby sitting classified as an important work assignment?
3. Discuss the importance of keeping the telephone open for emergency calls while baby sitting.
4. Discuss the baby-sitter's fact sheet. Can you improve it?
5. What safety precautions should be taken when filling a gas tank?
6. What fire-fighting suggestions are given for the service-station attendant?
7. Discuss the correct way to remove a pressurized-type radiator cap on a hot engine.
8. Why is it a good idea for you to know what industry is doing in the field of safety?
9. Discuss the need for a safety organization in an industrial plant.
10. What are the duties of the safety committee?
11. Discuss the importance of making complete records on accidents and near-accidents.

SELF-CHECK TESTS

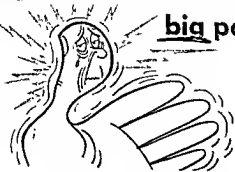
True-False

1. Service-station work is always very hazardous because of the flammable liquids handled.
2. It's best to fill a motor-scooter fuel tank from a gallon container.
3. A gasoline fire can start from static electricity.
4. The radiator cap of a pressurized cooling system can be vented by turning it counterclockwise until it stops.
5. A baby sitter is not responsible for a child's safety because the law states that a minor is not legally responsible until the age of 21.
6. In spite of the doubled working force in the past twenty years, labor and management have been able to cut the accident death toll in half.
7. A safety committee is a group of workers who have the job of looking after your safety, similar to the job of your safety patrol in school.
8. One of the important tasks of the industrial safety organization is to make complete reports on all accidents and near-accidents.

little slivers—



big pains



The subject is frequently given grotesque treatment to attract attention. Will you remember the slogan, "Little slivers—big pains"?

COURTESY INDUSTRIAL INDEMNITY COMPANY

safety by several means: meetings, committees, educational posters, improved working conditions, and a first-aid station. Industrial labor unions are very strong forces behind this.

One of the more important tasks of the safety organization is to make complete reports on *all accidents* and *near-accidents*. These reports are carefully investigated by trained safety engineers. In the event of other near-accidents, similar to the one reported, steps are taken to prevent recurrence.

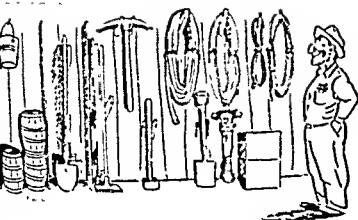
Safety meetings are held to discuss workers' safety problems

- A safety committee is a group of workers, similar to your school safety organizations, who have the job of looking for dangerous situations and equipment
- First-aid stations mini-

A well-equipped first-aid station. Specialized equipment and know-how are available to minimize the effects of an accident.

COURTESY AETNA LIFE AFFILIATED COMPANIES



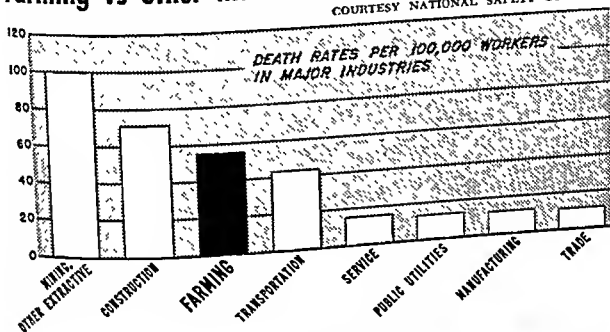


Everything will look better, the farm will be safer, and the farm manager very pleased if you help keep things orderly.

COURTESY INDUSTRIAL INDEMNITY COMPANY

Farming vs other industries

COURTESY NATIONAL SAFETY COUNCIL



A farmer is his own boss, but his safety is very important to himself and his family.

It is more important for an agriculturist to be safety conscious and receive training in first aid than other businessmen. This is true because he works with a variety of tools, in all kinds of weather, alone much of the time, and often at a distance from the house. Any small accident, therefore, might have a serious consequence.

CHAPTER 6: IN AGRICULTURE

Whether we help grow food to be sold in the markets or whether we raise vegetables on a small section of the back yard, there are certain safety measures to be heeded. Naturally, the larger the farming operation, the more mechanical equipment is used; this increases the exposure to danger.

In one recent year, 3,600 farm workers lost their lives accidentally.

Whether the operation is a small or a large one, farmers have one thing in common—they tend to work alone. And, if they do things carelessly, they have no supervisor, no safety engineer, and no safety patrol to warn them of potential hazards.

In one recent year, 300,000 farm workers were injured.

It's quite common to see a farm worker using unguarded machinery, an uncovered belt with loose stitching, or a grindstone without a glass shield. He may often wear floppy, loose, or torn clothing, which is easily snagged on the unprotected machinery. A good businessman cannot allow such things to exist. Every farm or ranch operator is a businessman today.

Of all accidents on farm land, one third involve machinery.



Poor housekeeping is the farm's number one accident-breeding condition. A safety-conscious 4-H Club member does his part to clean things up.

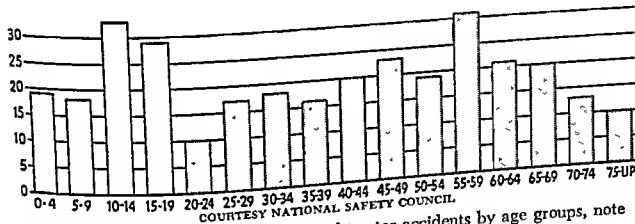
COURTESY NATIONAL COMMITTEE ON BOYS AND GIRLS CLUB WORK

uphill is never good practice because the front end is elevated almost to the turning over point. A tractor can pivot backwards and over in the length of time it takes for the rear wheels to make a quarter of a turn.

The contact with the ground is more evenly distributed on belt-track machines, and the track tends to drive you on and across an obstacle, so that tipping backwards is rare.

Shafts used for power take-offs figure in many accidents. Power take-off shielding helps to reduce such accidents.

Extra riders are factors in the second highest number of tractor accidents. Children aren't the only victims, but they

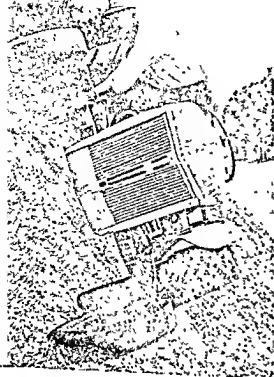


They die so young! In this study of fatal tractor accidents by age groups, note how many youngsters die. Whose fault is it?

Farm machinery such as this is certainly no toy for a youngster. The use of unguarded machinery is often encountered in agriculture.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA





A tractor can upset if the bank is too steep.

TRACTORS AND OTHER MACHINES

Tractors head the list as instruments in fatal farm-work accidents. Because farm help is scarce, very young persons frequently drive the tractor (illegal in many states). They are strong and alert enough to operate mechanical levers, but may not have enough experience and knowledge to safeguard themselves. Specific training in the safe operation of such equipment is urgent.

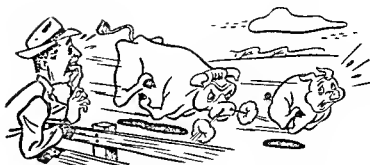
Tractors upset much more easily than we realize. They are heavy, and the weight center is high off the ground. Once a tractor tips to a certain angle, it will gather enough momentum to continue on over.

Most such accidents occur when one side drops into a deep rut or hole, or hits a rock at good speed • Or it can happen when the bank of a ditch gives way under the machine's weight • High speed is always a factor. When the speed is *doubled*, the danger of upsetting increases *four times* • Driving along a slope is necessary yet risky because it puts the tractor off balance continuously.

Wheel-type tractors may tip over backwards when the rear wheels encounter an obstacle and the throttle is open. The front end lifts up and flops back • Pulling a tool hitched above the drawbar increases the possibility of tipping over • Driving

Keep bulls penned separately. They turn suddenly from gentle animals to charging furies.

COURTESY SWIFT AND COMPANY



stock raising, you must keep them in a strong pen to avoid trouble.

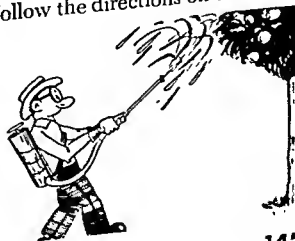
There aren't many work horses around anymore, but a surprising number of people are injured by riding horses. Even the most gentle horses kick when surprised • Speak softly to an animal you are approaching • Be sure that the saddle is firmly attached before mounting the horse • Avoid riding through trees, on swampy land, or over rough fields • Keep to proven paths, within calling or sighting distance of an inhabited area.

CHEMICALS

A billion pounds of insecticides are used annually in the United States. They have nearly 5,000 trade names. These compounds vary greatly in their toxicity—from harmless to deadly.

Insecticides are made to kill! Of course, they are meant for insects, but that would be of little comfort to a person poisoned by a toxic exposure. To be on the safe side, consider all insecticides unsafe.

The first rule is to read and follow the directions on the label



It's dangerous to spray into the wind because some of it will be blown back over you.

COURTESY CALIFORNIA STATE DEPARTMENT OF INDUSTRIAL RELATIONS

are involved much too often. In each case, the adult who allows the child to ride thinks he is doing him a favor. The driver will do anything to protect the child—except to refuse him a ride.

Tractors are involved in many highway accidents. The fact that the driver of the automobile is more often to blame doesn't help the farm worker. He should be especially interested in avoiding an accident, since he suffers more in such encounters.

Rear-end collisions from fast-moving cars are quite common. Keep a tractor as far over to the right side of the road as possible. Stop, look, and listen before pulling onto a public road—and send someone to the top of any nearby hill to signal either "all-clear" or "hold everything."

Bright flags by day or lights by night are very important, to mark both the corners and extensions of a load, or the machine itself.

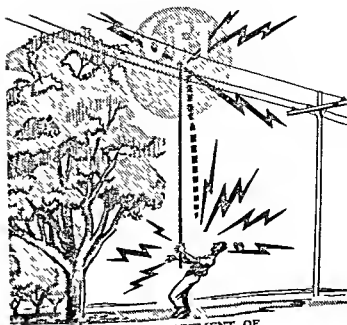
LIVESTOCK

Except for farm-machinery accidents, handling livestock causes more injuries than any other work. It is important to treat livestock properly. Forgetting this paramount rule can easily result in an accident.

Milk cows are involved in more accidents than any other kind of livestock. Of course, they are handled twice a day, and in many cases, under crowded conditions. People are trampled by frightened cows. Too often the cause of the animal's excitement can be traced directly to impatience or roughness of the handler.

Many injuries are caused by an animal being startled at the sudden approach of a human being. Speak to an animal before entering its stall. Stroke its neck if it appears nervous. Know your business. Prevent interference and horseplay from others.

Many people make excuses for careless handling of a bull by saying, "We've raised him as a pet and he wouldn't hurt anyone." But the records show otherwise. Bulls have turned suddenly, and become enraged without warning. If you take up



COURTESY INDUSTRIAL INDEMNITY COMPANY AND CALIFORNIA STATE DEPARTMENT OF INDUSTRIAL RELATIONS

You have to be your own safety supervisor when working in the orchard • Remember that you are *grounded*, when working on a tree near a power line. Pipes should be at least 6 feet from power lines.

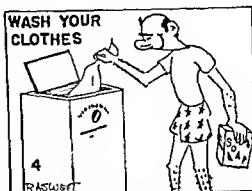
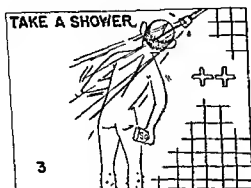
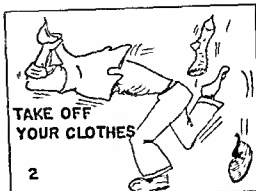
Fertilizers are not generally thought of as dangerous. However, *ammonium nitrate*, commonly used as a fertilizer, is also used in the manufacture of explosives. Ammonium nitrate can be exploded under favorable conditions by mechanical shock. Remember an explosion aboard a ship loaded with ammonium nitrate in Texas City set off a chain of events which resulted in a major disaster.

In the Texas City disaster, 512 people died, and \$50,000,000 worth of property was destroyed.

Ammonium nitrate should be stored only in fireproof masonry buildings. The bags should not be piled higher than ten bags high, six wide, and thirty long. There should be a 3-foot separation between piles and an aisle of 10 feet every 100 feet of piling. Spilled material should be cleaned up immediately, and smoking should be prohibited in any building in which the material is stored.

TOPICS FOR DISCUSSION

1. What factors make agriculture more dangerous than industrial work?
2. Why is it more serious for a farmer to suffer a minor injury than a worker in a factory?

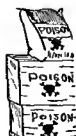


COURTESY CALIFORNIA STATE DEPARTMENT OF INDUSTRIAL RELATIONS

If you do get doused with spray, clean up immediately.

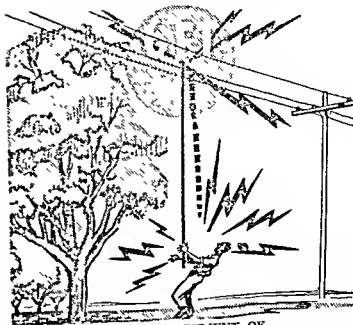
• Store insecticides where children cannot accidentally get them • And be sure to label all specially mixed preparations accurately. Recently, a newspaper story told of a farm tenant who mixed an insecticide for a special purpose. Unfortunately, he stored it in a pop bottle which his youngster associated only with refreshing drinks. The boy was saved by emergency treatment, but not all such cases turn out happily.

Some chemicals require that the worker wears protective clothing and a respirator when spraying, as they are very toxic if breathed or absorbed through the skin.



Of course, you shouldn't sleep in a room where insecticide powder is stored.

COURTESY CALIFORNIA STATE DEPARTMENT OF INDUSTRIAL RELATIONS



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TOPICS FOR DISCUSSION

1. What factors make agriculture more dangerous than industrial work?
2. Why is it more serious for a farmer to suffer a minor injury than a worker in a factory?

3. Why is the handling of tractors unwise for an untrained person?
4. What danger exists in the use of unshielded power take-offs?
5. What precautions should the farm worker take to avoid a tractor-automobile accident?
6. Discuss the importance of quiet, kind firmness in handling livestock.
7. Why are insecticides dangerous to humans?
8. Discuss the importance of handling fertilizers carefully.

SELF-CHECK TESTS

Multiple-Choice

1. (a) 3,600; (b) 7,200; (c) 10,800 farm workers lost their lives in one year.
2. (a) $\frac{3}{4}$; (b) $\frac{1}{2}$; (c) $\frac{1}{3}$ of all farm accidents involve machinery.
3. (a) 600,000; (b) 300,000; (c) 100,000 farm workers were injured in one year.

True-False

1. Agriculturists are very safety conscious.
2. Tractors head the list in farm-work accidents.
3. Upsetting is by far the commonest way for accidental tractor deaths to occur.
4. Animals get the blame for livestock accidents, but the impatience of the handler is more often the cause.
5. Not all insecticides are unsafe for humans; therefore we should learn the names of the deadly ones to protect ourselves from danger.

Completion

1. Agricultural men have one thing in common—they tend to work _____.
2. Farming is the _____ most hazardous industrial occupation.
3. A tractor will tip over backwards in the length of time it takes the rear wheels to make a _____ of a turn.
4. _____ are involved in more farm accidents than any other kind of livestock.
5. _____, commonly used as a fertilizer, is also used in the manufacture of explosives.

CHAPTER 7: TRAINING FOR EMERGENCIES—FIRST AID

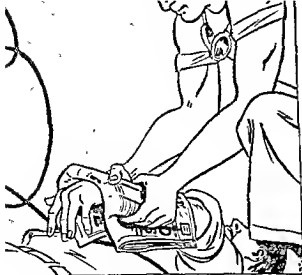
"What! I might sentence a person to die? Never!" you would say, if asked the question. Yet—every day someone, somewhere, is forced to stand helplessly by and watch a person die. Why? Because he is untrained, unable to do anything to prevent death from striking during a moment of crisis.

Consider this possibility: Suppose you are walking with a child along a road after a heavy storm. The child accidentally contacts a fallen live power line. Hundreds of volts of electricity attack his body. In a brief moment he will die of electric shock. What do you do? You do either of two things: (1) You stand transfixed, watching—horried—frozen with fear. You are helpless to move or act because you do not know what to do. Or (2) fortified with previously gained knowledge, you know how to break that electrical contact with no danger to yourself. Your subconscious mind will spur you to act instantly

In an emergency, you do one of two things; either you stand transfixed, horrified, frozen with fear, or you act with sureness because of training • A long, dry wooden pole will allow you to remove the wire without danger to yourself.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY AND ASSOCIATION OF CASUALTY AND SURETY COMPANIES





A thick roll of dry newspapers is an effective insulator in the event a pole is not available.

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

and you will have a chance to save the child's life. You will not have to "sentence" him to die.

Consider another situation. Suppose that you meet a group of swimmers who have just rescued a drowning man, but they have not learned how to apply breathing aids. The man will surely die. But you have had first-aid training and know what to do. If you start artificial respiration quickly enough, you may save the man from death.

You can be sure that many people are alive today because someone knew what to do during an emergency. Perhaps you can think of some past incident in your life where prompt, sure action saved you or another person from death.

The most tragic deaths are those which could have been prevented with the proper knowledge. In this country, in a

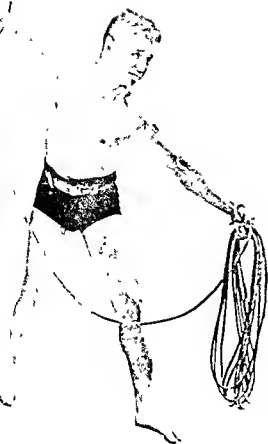
Do you know what to do to extinguish burning clothing? • The most effective way to put out the fire is to roll the victim in a blanket or coat in order to smother the flames.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY



In the event someone is in trouble in the water, you can help more effectively, in most cases, by throwing him something on which to hold.

COURTESY BOY SCOUTS OF AMERICA



recent year, there were 6,100 drownings, 40,000 highway deaths, 28,000 killed in the home; in all, 95,000 people died in accidents. How many of these lives might have been saved by proper emergency action? There is no way of knowing. However, it is estimated that the figures might be as high as 20,000! In other words, 15% might have been saved.

In this and following chapters, common emergency situations are described and instructions given on how to handle them on an instant's notice. Combined, these situations cost the lives of many people each year, but they are only typical of dozens of other such emergencies that can mean death if not handled in time. Study these situations, learn the quick, safe way to act, and store this knowledge firmly in your mind. The need to use this knowledge may come at any time—today, tomorrow, next month, or next year.

FIRST AID*

First aid is the immediate but temporary care given to a victim of an accident until a doctor arrives. It may mean the difference between life and death, between rapid recovery or

*Abridgment of the American National Red Cross textbook.

long hospitalization, between brief disability and permanent injury. In every case, proper first aid reduces suffering and makes the doctor's task easier when he assumes charge.

General Directions

Remember that first aid is only *temporary* care. Dressings should be simple. A doctor should not have to waste time removing elaborate bandages.

1. Keep the injured person lying down in a comfortable position, his head level with his body, until you know how badly he is injured.

2. Look for hemorrhage, stoppage of breathing, wounds, fractures, and dislocations. Be sure that you find *all injuries*. Pain is an important indication of any injury. When examining a person, let him guide you to the injuries.

Serious bleeding and stoppage of breathing must be treated immediately before anything else.

3. Keep the injured person warm. This is essential to prevent serious shock.

4. Send someone to call a doctor or an ambulance. Your messenger must provide this information: (1) the location of the injured person; (2) the nature, cause, and probable extent of injury, and supplies available; and (3) what first aid is being given. *All this information is essential so that a doctor will know exactly where to come, what equipment he will need, and what directions to give you before his arrival.*

5. Keep calm and avoid moving the injured person unless it is absolutely necessary.

6. Loosen tight clothing, especially around the neck.

7. Liquids should not be given to an unconscious person. They may enter the windpipe and strangle him. But if the victim is conscious, and if there is no evidence of profuse bleeding or severe abdominal injury, give him water slowly and in sips. Hot tea and hot coffee are satisfactory, particularly if the patient feels cold. No alcohol should be given.

8. Keep onlookers away. They interfere with treatment.

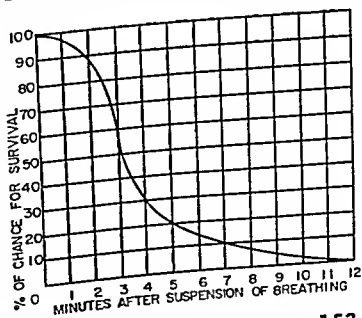
9. Make the patient comfortable and keep him cheerful, if possible. If the accident is serious, keep him from seeing his own injury or knowing how badly he is hurt.

Breathing Aids

Life depends on the energy freed when oxygen from the air combines with food in the body cells. These cells cannot store oxygen, so the lack of it causes death in a few minutes. Some brain cells die when they have been deprived of oxygen for as short a time as four minutes. It is important, therefore, to start *rescue aid* immediately if the victim is not breathing.

The meaning of suffocation: If the air is bad, and lack of oxygen develops slowly, a person can suffocate almost without noticing it. Gradually his mind becomes impaired; there is shortness of breath, perhaps a headache, and a pounding in the ears. However, a feeling of well-being may hide the danger signals. Memory is obscured, and the victim performs drunken actions.

As the lack of oxygen progresses, this "drunken" state passes into a stage in which there is paralysis of the body muscles while consciousness remains. At this point the asphyxiated person knows he is in mortal danger but he can do nothing about it.



Any breathing aid, to be most effective, must be started as soon as possible. After three minutes without air, we have only a 50/50 chance of survival.



The fire and police emergency crews use special equipment to force air into and out of the victim's lungs.

COURTESY LOS ANGELES FIRE DEPARTMENT

Unconsciousness soon comes and finally his breathing stops. But the heart usually continues to beat weakly, and a life can be saved if the proper measures are taken *at once*.

Movement of the lungs brings in air, with its oxygen, and replaces the waste products, carbon dioxide and water. When air enters the lungs, some of the oxygen is taken up by the red blood cells which travel through the body. Body cells take the oxygen from the red blood cells and replace it with carbon dioxide. In the lungs, the blood cells give off the carbon dioxide and absorb a fresh supply of oxygen.

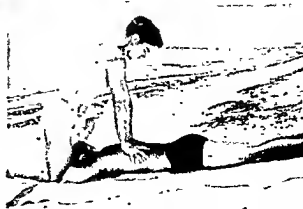
The only way to save the life of a person whose breathing has stopped, is to produce movement of "good" air into the lungs. This is done by alternately compressing and expanding the chest, or by using the preferred mouth-to-mouth method.

Application of Pressure Aid

The mouth-to-mouth method is explained later. The pressure method is illustrated on these two pages.

This is the initial position. Place your hands on the midback • To apply pressure, rock forward until your arms are vertical.

COURTESY UNITED STATES COAST GUARD OFFICIAL PHOTO





COURTESY UNITED STATES COAST GUARD OFFICIAL PHOTO

Release the pressure quickly and, as you rock back, allow your hands to come to rest on the victim's arms just above his elbows • Continue rocking backward, drawing the victim's arms upward and toward you.

The cycle should be repeated about twelve times per minute at a steady rate. Both phases should take about equal time.

As soon as artificial respiration has been started, *and while it is being continued*, an assistant loosens any tight clothing about the patient's neck, chest, or waist. After doing this, he calls a doctor.

It is very important to keep the patient warm, although this is secondary to the need for oxygen. Blankets should be placed under the victim as well as above him.

After-Treatment

Everyone should be able to recognize the signs of returning life. A distinct flush of color indicates that the heart is beginning to beat weakly. Sometimes the mouth begins to twitch and the fingers to creep. The most encouraging sign, however, is a sobbing "catch of the breath," heard during the intake of air. It may be followed by a groan and a series of gasping, irregular breaths. At this stage, the operator must be especially careful to continue giving artificial respiration. The efforts of the patient will become more and more effective as oxidation of the blood progresses, and an occasional pause will enable the operator to decide when his efforts can cease.

The patient must be kept lying down and quiet. Absolute rest for twenty-four hours is generally sufficient for recovery, but the advice of the doctor will govern further treatment. The greatest danger at this stage is the possible development of pneumonia.

Mouth-to-Mouth Aid

The best method of rescue breathing aid, as endorsed by the American Red Cross, is mouth-to-mouth.

To prepare the subject, insert your middle finger in his mouth to clear it of any foreign matter. Then press his tongue forward. Turn the victim over to a face-down position and pat him firmly on the back, which will help to dislodge any foreign object from the air passage.

A simple tube device may be used to eliminate the intimate oral contact in the mouth-to-mouth method. The device is inserted into the victim's mouth, keeping his teeth and lips apart while sealing the oral opening.

To use a rescue breathing device, turn the victim on his back, hold the tube in place with your index fingers, pinch the nostrils together with the tips of your thumbs, and keep the jaw in a jutting-out position with your other three fingers.

Take a deep breath and blow into the tube, forcibly in adults and more gently in children, until you see the chest rise. Remove your mouth and turn your head to one side to listen to the exhaust of air while you take another deep breath. The sound of the exhaust will tell you the effectiveness of air transfer. Blow into the tube at a rate of twelve times per minute for an adult; twenty for a child.

Mrs. Wallace Craig, wife of the Red Cross Director of First Aid & Water Safety Services, demonstrates the first step in the approved mouth-to-mouth method of artificial respiration. She is placing her middle finger in her son's mouth to clear it and press the tongue forward. Patting him sharply on the back helps to dislodge any foreign object that may be clogging the air passage.

COURTESY SAN JOAQUIN COUNTY
SAFETY COUNCIL



COURTESY AMERICAN NATIONAL
RED CROSS

Place the victim on his back; use your middle fingers or both hands to lift the lower jaw from beneath and behind so that it "juts out." Holding the jaw in the "juted out" position, cover his mouth and nose with your mouth to make a relatively leak-proof seal. Now breathe into the victim with a smooth steady action until you observe the chest rise.

If, at any time, you feel resistance to your breathing, and the victim's chest does not rise, check for an obstruction in his throat. Make sure that his head is correctly positioned. If you still fail to get proper air transfer, slowly rotate the head from side to side while increasing the blowing pressure to bypass any partial obstruction. In many cases, the obstruction can be removed by using the rescue breather as an aspirator (air remover). Suck on the tube as you turn the victim's head from side to side. The vacuum will deposit the foreign object in the side of the mouth, where you can remove it with your fingers. In some cases, it may be necessary to turn the person on his side, striking him several sharp blows between the shoulder blades while holding his head in the extended position.

One of the criticisms of the prone method is that the back

With a rescue-breathing device, artificial respiration can be started with only the victim's head out of the water • The victim need not be pulled out of the pool to begin artificial respiration with a rescue breather. Only the head need be lifted from the water. This forces the chin into the required jutting-out position.

THESEY MEDICAL SUPPLY COMPANY, ROCKFORD, ILLINOIS.



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COURTESY SAN JOAQUIN COUNTY
SAFETY COUNCIL



A fall frequently results in a fracture of a bone. You can tell by the awkward position of the limb in some cases; in others, a break will be felt in the bone by running your fingers lightly over the suspected area.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY



pound fracture, the bone splinters and punctures or tears through the skin.

Usually a fractured bone can be located by the deformed shape of the limb. There is always pain and swelling at the break. By running your finger gently over the suspected point, you will be able to feel an uneven place.

The first rule in handling a fracture is to prevent further damage. Avoid moving the victim unless it is absolutely necessary. If the patient must be moved, apply a splint to immobilize the bone ends so that they will not damage blood vessels, muscles, or pierce the skin.

Treat the patient for shock which will result from a fracture.

TRAUMATIC SHOCK

Traumatic shock (shock resulting from an injury) is a depressed state of all body functions due to failure of the blood circulation. It may be caused by severe hemorrhage, burns, crushing, or any violent, painful injury. The degree of shock varies from mild forms lasting only a short time to severe cases which may result in death.

Any painfully injured person will develop shock, and treatment must be started immediately without waiting for the symptoms to appear; shock is much easier to prevent than to cure.



COURTESY MEDICAL SUPPLY COMPANY,
ROCKFORD, ILLINOIS.



A breathing-aid training device. The trainee's breath inflates the plastic bag, which simulates the victim's lungs. The victim's breath passes through an opening in the side of the tube which allows him to breathe normally. A disposable filter mouthpiece is used for each trainee • The instructor shows a trainee how to insert the rescue breather. Notice that the pretended victim is pinching the hose to simulate a blocked air passage •



The tips of the thumbs pinch the nostrils together, the index fingers holds the rescue breather in position, and the last three fingers hold the chin in the jutting-out position.

of the unconscious person's tongue tends to block his air passage. With a rescue breathing device, both of the rescuer's hands are free for the support of the head and jaw, which assures that the tongue will not block the air passage.

Another advantage is that a drowning victim need not be brought out of the water. The rescue work can be performed with only the victim's head on the boat edge or the edge of a pool.

FRACTURES

A fracture is a break in a bone. It may be simple or compound. In a simple fracture, only the bone is broken; in a com-

The pulse can be felt by using your middle fingers just above the subject's wrist.



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Exposure to cold increases shock. Therefore it is important to conserve body heat and keep the subject warm. Wrap him well to prevent loss of body heat. Newspapers, placed under or between layers of blankets, help to conserve warmth. As the victim's nerve endings are usually numb during a state of shock, avoid the application of artificial heat, so hot it might cause burns. The important thing is to *conserve the patient's own body heat*—not add heat.

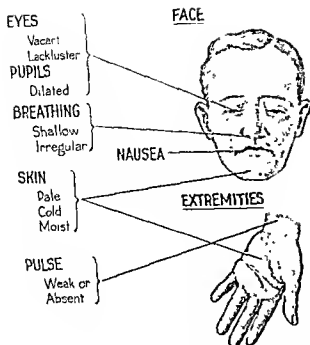
Fluids may be given by mouth at the patient's request if he is conscious, but no fluids are given if he has an injury to the abdomen, is gagging, swallowing with difficulty, or is vomiting. Hot fluids in small amounts are good because the warmth is valuable in combating shock.

Gravity can be used to increase the flow of blood to the heart and brain by keeping the patient's body horizontal, or by raising the feet and legs. An exception is the patient who has a severe head or chest injury.

Serious loss of blood produces shock, so it is most important to prevent further loss. The control of hemorrhage is described in the section on wounds, but it must be emphasized here that *the tourniquet should never be used* until all other methods fail. Shock frequently increases in severity as a tourniquet is loosened.

WOUNDS AND THEIR CARE

A wound is a break in the skin and flesh. Wounds not only cause bleeding but can become infected.



The symptoms of shock.

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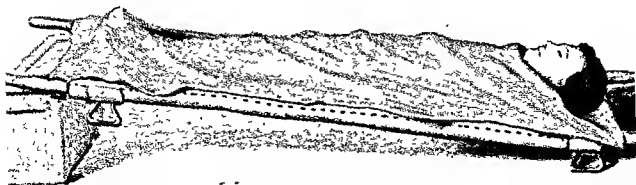
Shock causes a depression of the blood circulation which results in a fall in blood pressure. When this happens *the heart beats faster* to compensate for the lowered amount of blood. The blood vessels in the arms and legs contract in an effort to supply blood for the brain and nervous system. *The surface of the body becomes cold and clammy to the touch.* Because of the insufficient supply of oxygen to the nerve center which governs breathing, *breathing becomes rapid and shallow.* Because of the lack of sufficient oxygen, all cell activity lessens. The surface temperature of the body falls; *sweating is usual and often profuse.*

First Aid for Shock

For shock, an ounce of prevention is worth much more than a pound of cure. Treatment must be given before the shock stage develops, if possible.

To help circulation, lay the shock victim so that the head is lower than the feet.

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The *brachial* pressure point controls bleeding from the arm • Applying *sub-clavian* pressure to stop bleeding around the shoulder or from the arm • Applying *femoral* pressure to the groin to control bleeding from the leg.

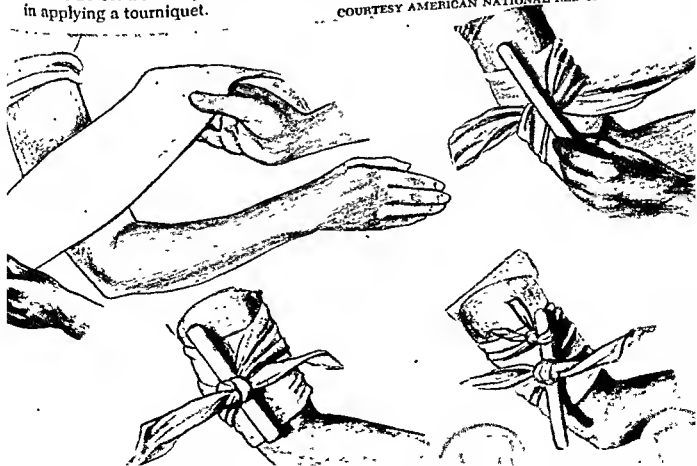
clothing so that the wound can be seen clearly. Apply a compress of folded cloth to the bleeding part immediately and maintain firm pressure to control the flow of blood.

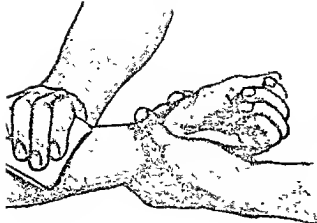
Arterial Bleeding

If the blood is dark red, and flows in a steady stream, it is from a vein; if it is bright red, and comes in spurts, it is from an artery. Additional pressure should be applied to the proper pressure point between the heart and wound when an artery is severed. This limits the flow of blood to the injured area.

A tourniquet is a dangerous device. Its use is discouraged unless bleeding cannot be controlled by direct pressure. This series shows the successive steps in applying a tourniquet.

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Direct pressure is the best way to control bleeding.

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As you know, infectious germs are everywhere—on the skin, in the air, and on the clothing. Some types of germs cause infection of the blood stream. Many serious flesh infections and cases of blood poisoning start from very small wounds. This is particularly true of punctured flesh wounds which are difficult to clean thoroughly. Avoid contaminating the wound by touching it with your hand, allowing the subject's clothing to press against it, or applying a rag or other unsanitary dressing.

Wounds With Serious Bleeding

When an artery or vein is cut, severe bleeding results. Loss of half of the body's blood is always fatal; loss of even two pints can be serious.

With all severe bleeding, shock is present or will develop.

This is one case where speed is essential; if bleeding is severe, you can bleed to death in 60 seconds. Remove enough

To control arterial bleeding, apply direct pressure to any one of six pressure points, here illustrated. This first picture shows pressure being applied to the carotid region. It controls the blood supply to the brain, which should not be shut off for over 5 minutes or brain damage may result • The temporal region pressure point controls bleeding from the scalp and forehead • The facial pressure point is located about one third of the way down at the jawline between ear lobe and chin.

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Infected wounds are too serious for the first-aider to treat. The service of a doctor is of the utmost importance.

BURNS AND SCALDS

Injuries caused by direct heat or electrical contact are called *burns*. A burn caused by a hot liquid or vapor is called a *scald*. Some chemicals, such as strong acids and alkalies, destroy body tissue too; such an injury is called a *chemical burn*.

Burns are classified according to the degree or depth to which the body tissues are injured: *first degree*—skin reddened; *second degree*—skin blistered; and *third degree*—deep destruction of tissue such as charring or cooking.

The danger from a small deep burn is less than from a large shallow burn. Death in the first day or two, after a large-area burn, is usually the result of shock; later death is chiefly the result of infection.

First-aid treatment of minor burns consists of applying a sterile covering to prevent infection. Petrolatum or other ointment may be applied to places where it is difficult to use a covering. *Cotton fluff should not be used* on a burn as it will stick to the wound and cause further injury to the tissues when the doctor removes it for treatment.

Large burns cannot be treated without help. Shock is always present. Skill and materials are all-important. The first-aider's duty is to get the patient to a doctor or hospital as quickly as possible; you must treat for shock meanwhile.

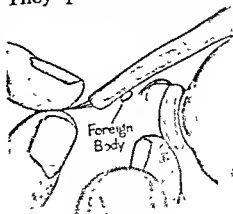
Chemical burns are washed immediately and continuously under running water. Call a doctor.

FOREIGN BODIES IN THE EYE

Most foreign bodies lodge on the lining of the eyelid, or become imbedded in the eyeball. They produce a typical

By pulling the upper lid over the bottom lid, sometimes foreign objects can be removed from the eye.

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A tourniquet is not used if the bleeding can be controlled otherwise. It can cut off the blood supply long enough to cause the part to "die," and gangrene to set in. *Older instructions* called for loosening the tourniquet at intervals, but this drains blood from the vital organs, which deepens the state of shock and can prove fatal. The *latest instructions* advise against the use of a tourniquet, if possible, but, if used, it must not be loosened. It is better that you lose a limb than your life.

Venous Bleeding

Bleeding from a vein is under much lower pressure than from an artery. Always make the patient lie down and elevate the bleeding part, except in the case of a fractured limb. Tight clothing, like garters or a collar, is removed if it is between the wound and the heart. Apply pressure along the edge of the wound, particularly on the edge away from the heart.

WOUNDS IN WHICH FOREIGN BODIES REMAIN

Splinters of wood are the most frequent causes of such wounds. If the foreign body is near the surface, it can be picked out. First apply an antiseptic to the skin. Then sterilize a knife point, needle, or tweezers by passing through a flame. Use to remove the splinter. Encourage bleeding by gentle pressure; this washes out the wound from the inside. After the bleeding has stopped, apply a sterile dressing.

INFECTED WOUNDS

An infected wound is one in which the germs that enter are not killed by the body's fighting forces or by treatment, but are able to grow in the wound. At once, Nature starts to build a wall to keep the germs from spreading to the rest of the body. Millions of white blood cells are sent to build this wall. Many are killed in the fight and their dead bodies form a considerable part of the pus usually present in an infected wound. *Squeezing* an infected wound tends to break down this defensive wall and may spread the infection.

Water or milk is best. Tilt the patient's head toward the injured side and then pour the fluid slowly into the eye while you hold the eyelids open with your fingers. Use an ordinary cup or drinking glass. If you have it, a small funnel can be used to direct the stream. The fluid is poured into the inner corner of the eye and allowed to run over the eyeball and under the eyelids until at least one quart has been used.

If a large amount of caustic has splashed into the eye, repeat the process with a second and even third quart of fluid. Then treat with a drop of mineral oil, apply a loose, non-pressure bandage, and get the patient to a physician immediately.

DRESSINGS AND BANDAGES

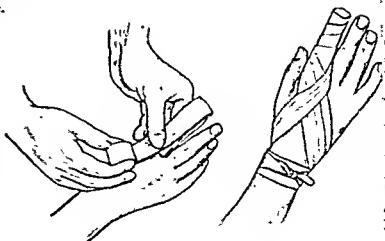
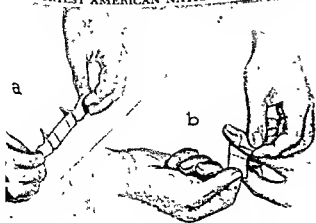
All accidental wounds are contaminated to some degree; try to prevent additional contamination through contact of clothing or other unsterilized material. As soon as possible the wound is covered to prevent the entrance of germs. Such a covering is called a dressing.

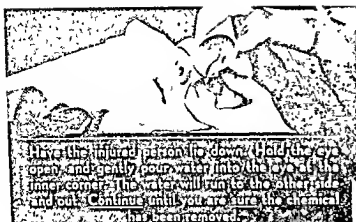
A *dressing* also controls bleeding and aids in the absorption of fluids. The most commonly used material for dressings is gauze because it is more absorbent and allows air to circulate. Absorbent cotton sticks to a wound and, therefore, should not be used.

Dressings must be sterile. In first-aid kits they are sealed

The common adhesive pad contains a medicant as well as adhesive tape to secure it • How to secure a finger bandage.

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COURTESY THE JAM HANDY ORGANIZATION



Only a loose, non-pressure bandage is suitable for the eye.

COURTESY AMERICAN NATIONAL RED CROSS

scratchy feeling which becomes worse whenever the eyelids close. The irritation causes the eye to secrete tears and makes it extra-sensitive to light. *Only foreign bodies lying on the surface* can be removed safely by first-aiders. Crude attempts to remove imbedded particles can result in damage to the vision.

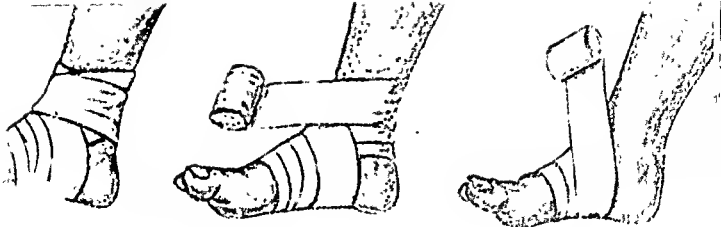
If the foreign body is *not imbedded*, it may be removed by pulling down the lower eyelid so that the area can be exposed to sight. If the object lies on the surface of the lower eyelid, it can be lifted gently with a damp corner of a clean handkerchief. If the particle is under the upper eyelid, grasp the lashes of the upper eyelid gently between your thumb and forefinger, have the patient look upward, and pull the upper eyelid forward and downward over the lower lid.

If these measures fail, put several drops of a heavy oil in the eye and send the patient promptly to a doctor.

BURNS OF THE EYE

Burns of the eye may be caused by heat, chemicals, or hot gases. When direct heat, such as an open flame, nears the eye, the eyelids usually close fast enough so that only the skin of the eyelids is burned. Such burns should be treated as you would treat other skin burns.

Chemicals such as acids or alkalis may spurt into the eye before the lids can close. First-aid treatment consists of immediate irrigation of the eye with large quantities of clean fluid.



COURTESY AMERICAN NATIONAL RED CROSS

How to apply a bandage to the ankle.

in individual wax-paper packages to insure sterility. An improvised dressing can be made of a freshly laundered handkerchief or any cloth which has been scorched by passing it through a flame. The small amount of black carbon which remains does not contain germs.

In handling dressings, avoid touching the surface which is to be applied to the wound • Be careful not to drag the dressing over the dirty skin around the wound • Tape the dressing in place with a bandage so that it cannot move.

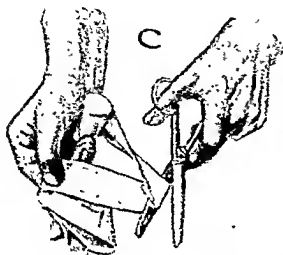
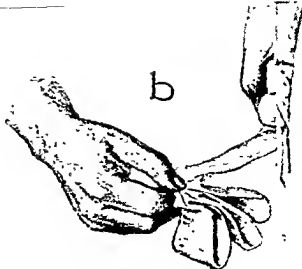
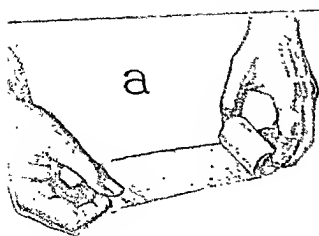
A *bandage* is used over a dressing to hold it in place. A square knot is recommended for tying bandages. Tie knots where they can be reached easily and will not cause discomfort.

The bandage should be snug but not tight; otherwise, it will cut off the return of blood in the veins. A wet bandage shrinks as it dries and will soon become too tight. Swelling usually follows an injury, and a bandage which was just right when applied may become too tight. The warning pain of a tight bandage may not be felt because of numbness, and great damage to tissue may result from shutting off the blood supply. Examine the bandaged part frequently for this complication, and loosen it if necessary.

FIRST AID FOR POISONING

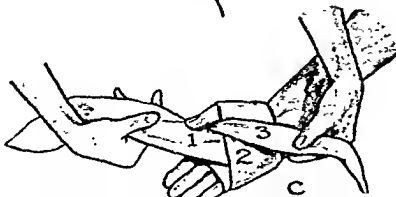
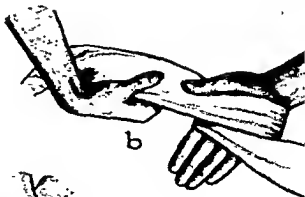
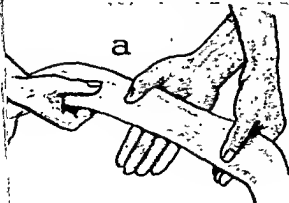
First aid for poisoning should be started at once. If a child takes poison, the entire family usually gets panicky and wastes valuable time rushing the victim to a hospital or else stands by helplessly while waiting for the doctor. Meanwhile the poison is being absorbed into the child's system.

The important thing to remember is to give first aid at once.



A dressing must be sterile; therefore care must be taken to handle only the edges as it is (a) unrolled, (b) pleated, (c) cut, and (d) applied • After the dressing is applied to a palm wound, these four steps show the application of a bandage to hold it in place.

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Vomiting *should not be induced* if the patient is unconscious or in convulsions or if he has swallowed a petroleum product (kerosene, gasoline, lighter fluid, etc.) or an acid or alkali, which burns the lining of the stomach. Vomiting might cause the weakened walls to rupture.

First aid for poisoning from acids is (1) neutralize with any mild alkali, such as magnesia, chalk, sodium bicarbonate, or lime water; then (2) soothe the burned membrane with a little milk, olive oil, or egg white.

First aid for poisoning from alkalis is (1) neutralize with a weak acid solution, such as lemon juice or vinegar; then (2) soothe the burned membrane with milk, olive oil, or egg white.

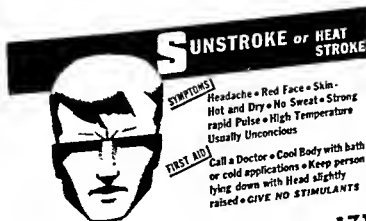
FIRST AID FOR SNAKE BITE

Prompt action is important to prevent the spread of venom. Make the victim lie down and keep him quiet. Tie a constricting band firmly around the limb to make the veins stand out. This is *not* a tourniquet, which would apply too much pressure and might damage the veins.

Sterilize a sharp knife or razor blade. Make a cross-cut incision through each fang mark about $\frac{1}{4}$ inch long and $\frac{1}{4}$ inch deep. Apply suction with a suction cup or by mouth. Continue this treatment until you can get the victim to a doctor.

SUN STROKE and HEAT EXHAUSTION

These two conditions are caused by exposure to heat. The symptoms and treatments are, however, different. It is im-





Many chemical cleaners are poisonous to a child, who cannot be expected to read the label and understand its warning. Poisons should be locked up so that a child cannot reach them.

COURTESY THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

At the same time, have someone else phone or send for a doctor. *It isn't necessary to remember a long list of antidotes.* In fact, better work will be done if the first-aider uses the simple measures at hand.

There are two important points to remember: (1) dilute and (2) wash out. A poison, diluted with a large amount of fluid, is never absorbed as rapidly as it is in a concentrated form. Also, vomiting is much easier to induce if the stomach is full. To wash out, induce vomiting repeatedly until the fluid is clear. Use soapsuds made with ordinary soap; salt water, or soda water made with ordinary baking soda; lukewarm water; dish water; or milk. The latter is especially good in cases in which corrosive poisons like lye or ammonia have been taken internally.

Be sure to give enough liquid—four to seven glassfuls, depending on the age, and preferably lukewarm. Tickling the back of the throat with the finger helps to induce vomiting after the patient is full of liquid. When vomiting begins, hold the patient in a position so his head is lower than his hips to prevent the vomitus from entering the lungs and causing further damage. When the stomach is well washed out, you can give an antidote. A heaping teaspoonful of Epsom salts can be given safely after the stomach is empty; it is a good treatment for most poisons.



COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

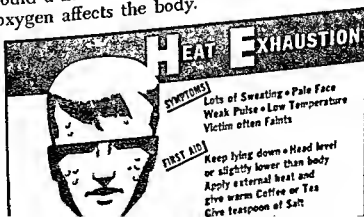
The chief cause of heat exhaustion is loss of salt from the body due to exertion and exposure to heat. Treatment for heat exhaustion consists of *applying heat* and giving *warm stimulants and salt water*.

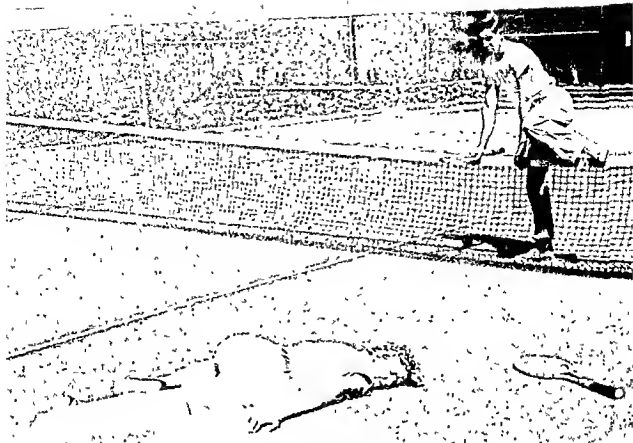
Heat exhaustion is also due to exposure to heat. People who are not physically up to par are more susceptible. The chief cause of heat exhaustion is the loss of salt from the body caused by over-exertion and perspiring. Apply heat, give warm stimulants and salt water. If the symptoms remain for any time, call a doctor.

TOPICS FOR DISCUSSION

1. In what way could an untrained person sentence a friend to die?
2. How many lives can be saved each year by proper emergency action?
3. What is first aid?
4. What nine suggestions are given as part of the general directions for a first-aider?
5. What two problems should a first-aider take care of first?
6. Describe how lack of oxygen affects the body.

COURTESY MARYLAND CASUALTY COMPANY





COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

Sunstroke is due to exposure to the rays of the sun.

portant to recognize which condition you are treating, because sun stroke is very serious.

For *sun stroke* apply cool wet cloths and loosen clothing after the person is carried into the shade. A doctor must be called as soon as the patient is made comfortable.

Treatment for sunstroke is to apply cooling applications after the victim is carried into the shade.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY



7. Which of the following is not a symptom of shock: (a) red, flushed face; (b) rapid, shallow breathing; (c) profuse sweating?
8. In the treatment for shock, the patient should be: (a) laid flat with his head high; (b) with his feet higher than his head; (c) helped to stand erect.
9. Which of the following is not true of arterial bleeding: (a) dark red blood; (b) bright red blood; (c) comes in spurts?
10. The latest instructions in the use of a tourniquet provide for it to be loosened: (a) every 15 minutes; (b) every hour; (c) not at all.
11. Which of the following should not be used as a covering to protect a burn: (a) petrolatum; (b) cotton; (c) sterile covering?
12. Which of the following is not a duty of a dressing: (a) to hold the bandage in place; (b) to help to control bleeding; (c) to aid in the absorption of fluids?

True-False

1. A first-aiders duty is to call a doctor before any work is started.
2. An injured person should always be rushed to a hospital.
3. The heart may still beat after breathing has stopped.
4. A person has a fifty-fifty chance of being revived if artificial respiration begins before three minutes have elapsed.
5. The mouth-to-mouth method of artificial respiration works best on adults.
6. Shock always follows in cases of fracture.
7. Shock is easier to prevent than to cure.
8. Shock can be fatal.
9. It is important to apply artificial heat in the treatment of shock to warm the patient.
10. Punctured flesh is easy to clean.
11. In all cases of severe bleeding, shock will develop.
12. A first-degree burn is not as serious as a third-degree burn.
13. Particles imbedded in the eyeball are too difficult for a first-aiders to remove.
14. Milk is an excellent eyewash for chemical burns.
15. Bandages should be very tight to prevent germs from entering the wound.
16. The treatment for snake bite is to apply suction.

Completion

1. First aid is immediate and _____ care given a patient until a doctor arrives.
2. Life depends on the energy freed when _____ from the air combines with food in the body cells.
3. In a _____, bone edges break through the skin.

7. Describe the preparations for giving artificial respiration.
8. Describe two kinds of artificial respiration.
9. What are the signs of life in a person returning from an asphyxiated condition?
10. Discuss the advantages of the mouth-to-mouth method of artificial respiration.
11. What care is necessary if you have to move a person with a broken bone?
12. What is traumatic shock?
13. Describe the symptoms of shock.
14. What is the best treatment for shock?
15. What two complications can be caused in a wound?
16. What technique is described to control bleeding from a severed artery?
17. Discuss the risk in using a tourniquet.
18. Discuss the treatment of wounds in which a foreign body remains.
19. How does nature fight infection?
20. What are the three degrees of burns?
21. What is a first-aid's duty in regard to burns?
22. How can a foreign body be removed from the eye?
23. What treatment is discussed for burns of the eye?
24. What is the purpose of a dressing? Bandage?
25. Describe the care needed in the application of a bandage.
26. What are the two important points to remember in regard to treating a poisoned patient?
27. What first-aid treatment is suggested for snake bite?
28. What first-aid treatment is suggested for sun stroke?
29. What first-aid treatment is suggested for heat exhaustion?

SELF-CHECK TESTS

Multiple-Choice

1. The first thing for a first-aid to treat is: (a) stoppage of breath; (b) serious bleeding; (c) shock.
2. Some body cells die when deprived of oxygen for as short a time as: (a) 2; (b) 4; (c) 8 minutes.
3. In the lungs, the red blood cells give off: (a) oxygen; (b) carbon monoxide; (c) carbon dioxide.
4. The artificial respiration cycle should be repeated: (a) 12; (b) 24; (c) 48 times per minute.
5. The best sign of returning life in a patient being given artificial respiration is: (a) profuse sweating; (b) resistance to the application of pressure; (c) a sobbing "catch-of-the-breath."
6. The first rule of handling a case of fracture is to: (a) rush the patient to a hospital; (b) apply a tourniquet; (c) immobilize the bone ends.

CHAPTER 8: TRAINING FOR EMERGENCIES—FIRE!

Big fires are terrifying. Only professional fire fighters know how to handle them. But every person should be prepared to put out a small fire so that it can't grow into a large one. Fire emergencies occur every day; your turn to meet one may be just around the corner!

A fire breaks out every 37 seconds.

What would you do in case of fire in your home? Most people never try to answer that question until they are faced with the problem—then it's too late! When it happens to you, a little knowledge beforehand beats all the luck in the world.

Fire takes 31 lives every day in the United States.

Make good preparations while you're at it. Let everyone in the family help. It may mean the difference between success and failure. The wrong kind of extinguisher, a ladder out of place, a hose that is too short, failure to locate a fire call box promptly—any one of these errors can be very costly. During the excitement of a fire, mistakes will occur; they won't cause disaster if you have planned carefully.

It has been estimated that almost half of all destructive fires

Fire destruction is frequently total • It takes special equipment and know-how to fight big fires successfully.

NATIONAL BOARD OF FIRE UNDERWRITERS AND NEW YORK FIRE DEPARTMENT, BY HELL-RIEGL AND HEFFERMAN



4. _____ is a depressed state of all body functions due to failure of the circulation.
5. A wound is subject to bleeding and _____.
6. If blood from a wound is dark red, and flows in a steady stream, it is from a _____.
7. Injuries caused by direct heat contact or electricity are called _____.
8. A wound should be covered with a _____ to prevent the entrance of germs.
9. The two most important things to remember in treating a case of poisoning are to _____ and _____.
10. In giving first aid for poisoning from acids, neutralize with any mild _____.

Matching

- | | |
|---------------------------|--|
| 1. First aid | 1. Breathing into the nose and mouth |
| 2. Artificial respiration | 2. Depressed state of all body functions |
| 3. Mouth-to-mouth | 3. Emergency treatment |
| 4. Fracture | 4. Compressing and expanding the chest |
| 5. Shock | 5. Burn |
| 6. Wound | 6. Constricting band |
| 7. Tourniquet | 7. Break in the skin |
| 8. Scald | 8. Poison-counteracting agent |
| 9. Dressing | 9. Broken bone |
| 10. Antidote | 10. Sterile covering |

An explosion aboard this oil tanker shows the power of burning petroleum products. Note that the floating fuel is burning.

COURTESY LOS ANGELES FIRE DEPARTMENT



COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

As a safety measure, check to see where fire exits are located *before* you sit down. In the event of fire, *keep cool*—and go to exits that are not blocked.

Most fires start in a small way and can be brought under control if attacked promptly with the proper equipment. The important thing is to know what to do, have the equipment handy, and then work *fast*!

There must be a direct relationship between the fact that 95 out of every 100 people do not have extinguishers at home and have never received instruction in the use of a fire extinguisher—and the fact that our national fire loss is ten times what it should be.

Every 2 minutes fire damages or destroys someone's house in this country.

PANIC

A week after the newly built Brooklyn bridge had been opened, a woman, falling down the steps at the Manhattan approach, screamed. Pedestrians crossing the bridge, without logical reason, thought it was about to collapse, and a panic followed. Twelve people lost their lives, and scores were injured.

Fire can sometimes start a panic in places where large numbers of people gather. The cry of "Fire!" may not always cause a stampede. But add the smell of smoke, the glare of flame, the flow of heated gases, and the stage is set for panic.

As a safety measure, exits are of major importance in giving people a feeling of security. But this is valid only when you have fixed in your mind the location of exits and the best way



COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS AND INSTITUTE FOR SAFER LIVING,
AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

Fire fighting in the cold of winter is especially demanding • If you do have a fire, and signal the fire department by means of the call box, stay there to direct the firemen to the scene of the fire. They will come to the call box, *not to your home.*

could have been controlled with very little damage, if someone had kept his head in the first few minutes.

To illustrate just how people lose their sense of reason when an emergency occurs, a 35-year-old man was turned into a blazing torch when a patch of grass he had sprinkled with gasoline was ignited by a swimming-pool-heater pilot light. With his shirt a mass of flame, the victim dashed past the swimming pool, which was *full of water* and out into the street where the burning shirt had to be torn from his back by a passerby.

Fortunately, the passerby kept his presence of mind, because it was only his swiftness of action that saved the man's life. The victim was severely burned.

In one recent year, 11,300 people lost their lives through fire.

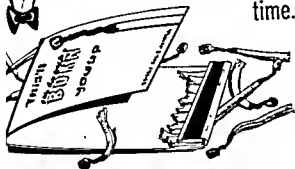
COURTESY NATIONAL BOARD OF FIRE UNDER-
WRITERS

"Quick, Honey, check to see if our fire insurance policy is paid up."





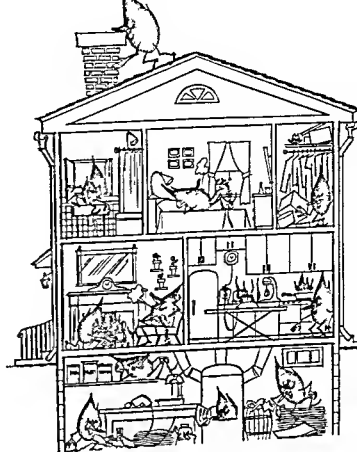
Get FIRED UP
with safety and
you'll be a social
LIGHT for a long
time.



COURTESY NATIONAL SAFETY COUNCIL

A fire check list of the average home.
How does your home rate?

COURTESY AETNA LIFE AFFILIATED COMPANIES



out-dated, but took care of the blaze. Some U.S. soldiers kidded the local fire fighters about their old equipment but they were proudly informed that French people were careful to *prevent* fires, and, therefore, need only this kind of equipment.

The records support the Frenchmen's contention. The average fire loss for each man, woman, and child in France last year was 48 cents, while the figure in the United States was \$1.95—about four times as much.

Last year, the nation's fire losses were over \$1 billion—a sum equal to the total personal income of everyone in the state of New Hampshire.

VOLATILE LIQUIDS

At room temperature, gasoline and other flammable liquids produce a vapor which overflows any open container in which the liquid is kept. The vapor, being heavier than air, sinks to

Judy Holliday demonstrates a way to start a fire. What three flammable items are close by?

COURTESY HOME & HIGHWAY





COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

Feel the door for heat before opening it • Keep hot doors closed in order to contain a fire • In the event of fire, stay close to the floor. Hot air rises and cool air drops.

to reach them in the event of trouble. With the possibility that the lights might go out, you must be prepared to reach an exit in the dark without confusion.

Knowing where to go, what to do, and doing it automatically not only lessens the possibility of panic, but the example you set will help others.

Every 46 minutes, a person dies as the result of fire in the United States.

CAUSES AND PREVENTION OF FIRES

To illustrate the value of fire *prevention*, the following story is told:

An American soldier, stationed in a French town, fell asleep while smoking a cigarette. A fire resulted, and the town's fire-fighting equipment came to the scene. It was odd-looking and



COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

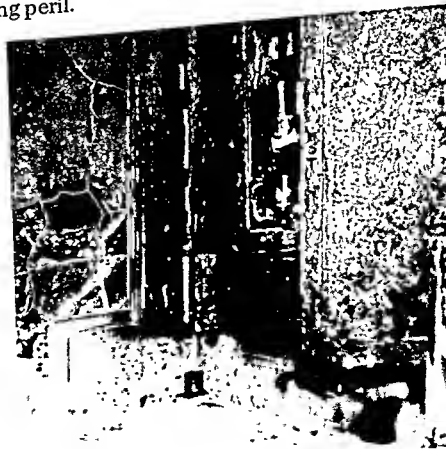
Fire is a wonderful servant and a cruel master. It requires but a small amount of care to keep it under control.



COURTESY LOS ANGELES FIRE DEPARTMENT AND NATIONAL SAFETY COUNCIL

This burning fuel tanker gives some idea of the intense fury of burning volatile liquids • Dry cleaning of clothes should be done only out-of-doors.

A recent newspaper story told of a young girl who was invited to a prom. While making preparations, she noticed that her favorite dress was stained. The only solvent available was gasoline. She took this to the service porch and poured some into a large dishpan. She rinsed the dress by dipping it up and down. The vapor slowly spread along the floor. Since the vapor was invisible, and its odor was everywhere anyway, the young girl did not notice the rising peril.



This is the result of using gasoline to clean clothes in a kitchen. The vapors reached the pilot light of the stove on the left.

COURTESY LONG BEACH FIRE DEPARTMENT, BY JOHN J. LLOYD



Careless use of matches is one of the foremost causes of fire.

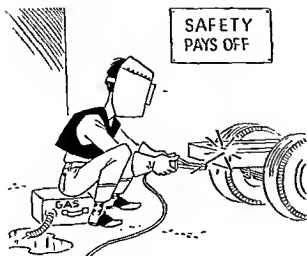
the floor and travels for a considerable distance. Any flame or spark will ignite it with explosive force. The source of ignition might be a pilot light, match, cigarette, or just the spark made by turning off an electric switch. Many serious explosions and fires have occurred even when the source of ignition was more than fifty feet away from where the vapors originated.

There were over 40,600 fires caused by flammable liquids in one recent year.

A great many fires have occurred because people store gasoline in glass containers, which shatter when dropped. The spreading liquid releases vapor, which many times finds a source of ignition and explodes violently.

A person cleaning clothes, floors, or walls with any combustible, volatile (vapor-producing) liquid saturates the clothing, or the cleaning rags. This spreads vapors. Actually, he has created a fused fire bomb, ready to be set off.

The yearly death toll from fire caused by flammable liquids is over 5,000.



This young fellow is going to go places.

If kerosene is poured on a banked fire, it may ignite with explosive force.

COURTESY AMERICAN MUTUAL LIABILITY INSURANCE COMPANY



The most important safety consideration is to use such cleaners out of doors whenever possible; otherwise, provide adequate ventilation. A good rule of thumb to follow is: If you can smell the odor of the vapor, you're breathing too much of it.

In one recent year, 6 deaths and 41 lost-time injuries from carbon tetrachloride poisoning were reported in California.

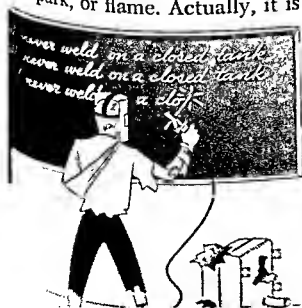
KEROSENE

Famous last words, "I've used kerosene for twenty years to kindle fires and I've never had any trouble." Of course, he has been lucky or he wouldn't be here to tell about it.

Kerosene isn't used as much as it once was, but we still read about several deaths each year from kerosene explosions. Kerosene, unlike gasoline, has to be heated to about 110° before vapor rises. It is only the vapor that burns. If the coals, ashes, or grates are just a little over 110° (and you can't tell by looking at them), vapor will form. Then a spark from a hot coal may set off an explosion.

SPONTANEOUS COMBUSTION OR IGNITION

Spontaneous combustion or ignition starts without a match, spark, or flame. Actually, it is a chemical action causing heat—



"Tanks" for the memory!

The gas rose until it reached the open pilot light under the hot-water heater. Suddenly—there was a blinding flash. The vapor ignited in a searing burst of fire. The young girl's dress was ignited and she ran screaming outside. Her movement acted like a bellows on the fuel, and her skirt was lashed into flames. Her brother, who had been safety-trained, ran after her with a blanket snatched from the couch. He managed to throw his sister to the earth and roll her into the blanket, which smothered the flames. But she suffered severe burns and shock because she did not understand the nature of combustible vapors.

For use in dry cleaning, many nonflammable chemical products have come on the market. Yet, although they reduce the fire risk, they sometimes present their own kind of health problem. Technically, most of these cleaners are known as "chlorinated hydrocarbons," and are sold under a variety of names, one of which is:

CARBON TETRACHLORIDE

When the efficiency and fireproof quality of this chemical as a cleaning solvent was discovered, it came quickly into common service. It is used in fire extinguishers though not recommended; as a dry cleaning agent, rug, and upholstery cleaner; and as a component of many wax polishes.

However, carbon tetrachloride is *twice as toxic* as chloroform. Continued exposure to the fumes of only a small amount can seriously injure your liver and kidneys, while short exposure to a large amount can be fatal.

Recently, newspapers carried a story in which the coroner ascribed the cause of death of one person and the serious illness of two others to the use of a rug cleaner on the floor mat in an airplane cabin. The fumes of the cleaned rug saturated the unventilated cabin while the plane was in flight. The pilot "blacked out," and the resulting crash killed him and hospitalized the two passengers, with crash injuries and kidney and liver trouble from carbon tetrachloride poisoning.

This is the result of emptying ash trays into a paper bag stored under the sink. Many people store refuse under the sink and drop used matches there, too. In this case, the match was still hot.

COURTESY LONG BEACH FIRE DEPARTMENT.
BY JOHN J. LLOYD



Many school fires may have been caused by a student's cigarette, secretly smoked near waste material. The cigarette is one of the worst fire offenders, because it continues to burn long after it has been discarded. The best safety habit is to snub or stamp out the cigarette before leaving it and to smoke only in places where it is safe.

Cigarettes and matches are responsible for over 122,000 fires annually.

A great number of fires begin with the careless use of a match. It has been estimated that 850 million matches are struck each day in the United States. That's a lot of potential fires. Glowing matches thrown into wastebaskets, dry leaves, or dry grass are common daily occurrences. A good safety habit

Judy Holliday demonstrates the wrong way to go to sleep. It could be her final slumber. Remember this.

COURTESY HOME & HIGHWAY





Spontaneous combustion is a frequent cause of fire, especially where paints are stored. Note the ferocity of the flames due to burning paints.

COURTESY LONG BEACH FIRE DEPARTMENT,
BY JOHN J. LLOYD

such as the chemical action of oily rags combining with oxygen. When the temperature rises to the ignition point, the material bursts into flame.

To prevent spontaneous combustion, keep waste materials cleaned up—especially in attics or near heating devices. Destroy oil-soaked rags or keep them in a covered metal container to exclude air and to prevent any fire from spreading if the rags ignite.

In one recent year 26,900 fires were started by spontaneous combustion.

CIGARETTES AND MATCHES

Of course it is hoped that you are not smoking yet, but you should be aware of the fire dangers caused by careless smokers.

Matches and children are a very poor combination. Careless emptying of ash trays is a frequent cause of fire because some of the ashes may still be smoldering.

COURTESY NATIONAL FIRE PROTECTION ASSOCIATION AND NATIONAL BOARD OF FIRE UNDERWRITERS



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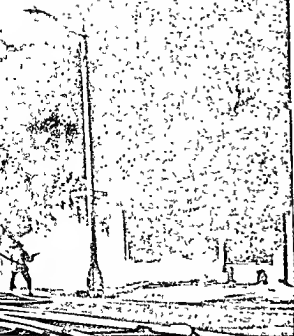
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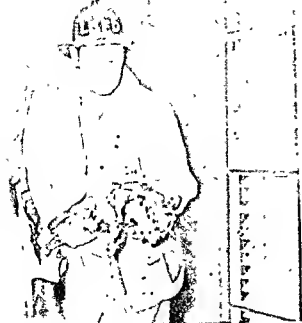
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COURTESY NATIONAL FIRE PROTECTION ASSOCIATION AND NATIONAL BOARD OF FIRE UNDERWRITERS



Dog-gone!

COURTESY LONG BEACH FIRE DEPARTMENT, BY JOHN J. LLOYD

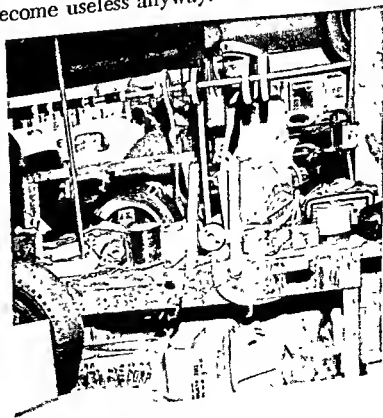


fingers. The cigarette dropped on the bed, and soon the padding was smoldering. This imperfect combustion produced carbon dioxide and carbon monoxide. The victim inhaled these gases; the carbon dioxide stimulated the breathing nerve center and caused the victim to breathe faster. He inhaled more and more of the carbon monoxide, the deadly gas. The direct cause of death was suffocation, not burns. However, it made no difference to the victim. The sleepy smoker is better off if he concentrates on one thing at a time—sleeping.

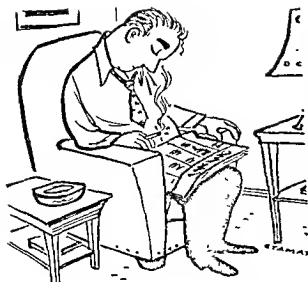
POOR HOUSEKEEPING

Another cause of fire is poor housekeeping. Collections of waste paper, oils, paints, and other debris are just what a fire needs. Always dispose of half-used cans of paint immediately after use. They dry out and become useless anyway.

Firemen are sent on inspection tours to warn citizens of potential fire peril. Note this poor housekeeping scene. You should cooperate with such inspectors. They are trying to help you prevent a fire from starting in the home or place of business.



COURTESY LOS ANGELES FIRE DEPARTMENT



Falling asleep in an overstuffed chair with a cigarette is a frequent cause of fire.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

is to break each match in half before throwing it away. If the match is cool enough to break, it is out. A better method, if water is available, is to dip the match before discarding it.

Improper storage of matches is another peril. Keep matches in a closed metal container, at a safe distance from a stove, and high enough to be out of the reach of children. No match is safer than the way in which it is stored and used.

HOW CIGARETTES KILL

By far the deadliest aspect of the cigarette fire hazard is when a person falls asleep while smoking in bed or when sitting in an overstuffed chair. In a great many cases, the cigarette kills the victim before he is even slightly burned. Consider a typical case: The victim fell asleep with a cigarette burning in his

The victim cannot keep from breathing carbon monoxide, a poisonous gas. Note how this person stayed unconscious on the bed until the smoke blackened the sheet before he was carried out by the firemen.

COURTESY LOS ANGELES EXAMINER



This is the safe, sane way to burn trash.

COURTESY NATIONAL SAFETY COUNCIL



HOME HEATING

Some stories fit so many situations that they are used over and over again. For example, many times we've heard about the house that had a leaky roof. When someone asked the owner why he didn't fix it, he explained that he couldn't work up there when it was raining and, when it wasn't raining, the roof didn't leak.

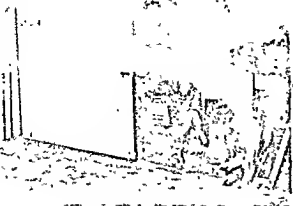
Maybe that's why chimneys and heating systems are involved in such a large number of home fires. They can't be repaired while they are being used and, when not in use, there's no immediate need. A warm-weather check-up and repair job is the answer.

In one recent year, 100,500 fires were caused by defective heating equipment.

Leaking flues often give a clue by darkening the area around the leak. Repairs should be made immediately; otherwise, a fire is sure to result.

COURTESY LONG BEACH FIRE DEPARTMENT,
BY JOHN J. LLOYD





Can your garage stand an inspection?

COURTESY LONG BEACH FIRE DEPARTMENT,
BY JOHN J. LLOYD

BURNING TRASH

If trash, leaves, or brush need to be burned, the safest way to do it is in a metal container set a safe distance from any building or flammable material. Another way is to separate the materials into several small piles in the center of a cleared space. Burn each pile separately. Several individual small fires are safer than one large one.

Remove all flammable materials from around the burning area • Have a pail of water, a commercial extinguisher, or an attached hose close by • A broom or shovel should be handy in case the fire spreads • Out-of-door burning should be done only on calm days • Stand by until the fire is burned out completely; then wet it down.

Burning leaves on a windy day may spread the fire.

COURTESY NATIONAL FIRE PROTECTION ASSOCIATION



A concrete water cistern is important as a storage place for water in the event of a fire on a farm.

COURTESY PORTLAND CEMENT ASSOCIATION

A garden hose, water bucket, and ladder are essential tools for fighting small fires on the farm.

COURTESY NATIONAL ASSOCIATION OF MUTUAL INSURANCE COMPANIES



buildings, and the diversity of activity. But something can be done about it by taking a few simple precautions.

First, prevent fires by continuous good housekeeping. Then: An adequate water supply is one of the most important considerations when fire breaks out • A pond or water cistern should be located within pumping distance • Fire pails and a garden hose, attached to a water faucet, are effective because most fires start in a small way • Fruit-spray equipment is mobile, carries a lot of water, and throws a good spray; its use as fire-fighting equipment should not be discounted • A ladder of the correct height should be located close to each building.

In one recent year, \$152,000,000 in farm property burned.

Barn Fires

A lot of money is wrapped up in a barn: in hay, grain, livestock, tools, and machinery. Unfortunately, after a fire is well started, you can work only to control it.

Fruit spraying equipment is handy to fight fires. It is portable and throws a good-sized stream.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS





COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

Hearth fires and portable heaters should always be screened.

Some of the inspection checks which are important in eliminating heating-system hazards are: (1) chimney defects, (2) furnaces and stoves for defective flue pipes, and (3) cleanliness of the flue.

In one recent year, 37,500 fires were caused by defective chimney flues.

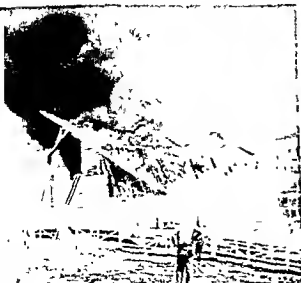
A screen in front of your fireplace will prevent sparks from jumping out and burning the rug.

FIRES IN THE COUNTRY

The farm and country place present certain special problems due to the distance from fire-fighting apparatus, the number of

Barns can be ignited by spontaneous combustion. A fire in a thinly settled district or on a farm is a serious thing. Many times the only thing the victim can do is to protect the other buildings by spraying with a garden hose.

COURTESY JOHN BEAN DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION



into flame when simply uncovered and exposed to air. Have all fire-fighting equipment in readiness when the pile is to be disturbed.

Electricity

No doubt, misuse of electricity will increase as a cause of farm fires as more and more equipment is operated on wiring that is getting older and older. Among the fire hazards is the installation of heat lamps for pig and chick brooders on already overloaded wires. The use of over-sized fuses is a rather common bad practice. Careful examination by a trained fire inspector can completely eliminate the fire hazard from electricity.

Faulty electrical wiring caused 63,900 fires and cost \$81,600,000 in fire losses in one recent year.

Storage of Flammables

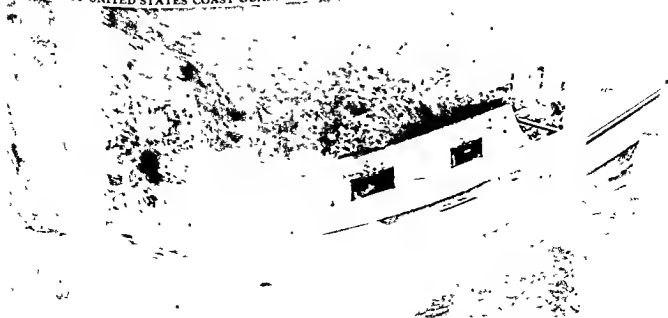
Keep gasoline, kerosene, and oils or greases out of work and stock buildings. Store them in a brick, stone, concrete, or metal building, where all machine equipment should be kept.

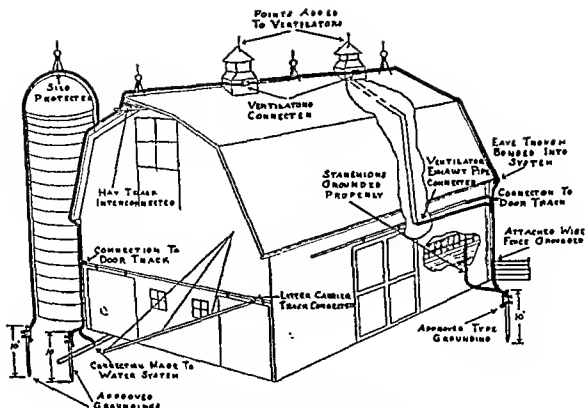
MOTORBOAT FIRES

Careless operation and poor maintenance cause most motorboat fires, which can be prevented by common sense and compliance with the following:

Most motorboat fires occur just after refueling. The gasoline vapors ignite from a spark or pilot light.

COURTESY UNITED STATES COAST GUARD





COURTESY NATIONAL ASSOCIATION OF MUTUAL INSURANCE COMPANIES

A correctly installed lightning and fire protection system comes very close to perfect protection for farm buildings.

Totally destructive barn fires can be eliminated with a little planning. They are caused mainly by three things: lightning, spontaneous combustion, and misuse of electricity.

In one recent year, 43,500 barns burned.

Lightning

While there is no sure way to protect a building against lightning, a correctly installed lightning-protection system comes very close to it. Experience has shown that protected buildings have had a twelve-to-one chance of escaping serious damage as compared to unprotected buildings.

Spontaneous Combustion or Ignition

Hay, with a high moisture content, generates heat. Leaking roofs wet stored hay and straw and cause heating. By probing frequently with a thermometer fastened to the end of a long pole, the temperature can be determined at various parts of the stored material. Opinions differ concerning critical temperatures, but 175° or above should be considered dangerous.

A heated portion must be removed to dry out. It could burst

If your boat is moored close enough to another boat taking on fuel, the vapors might flow into your cabin. It is good practice to check your own boat for such vapors before starting the engine.

FIGHTING FIRES

Fire depends on three factors: (1) a substance that will burn, (2) enough heat to cause ignition, and (3) oxygen.

Remove *any one* of them and you put out the fire.

Most fires have to be extinguished by reducing the heat or by cutting off the oxygen. Water is used to reduce heat. To cut off oxygen—which is the same as smothering—something that will keep air away from the fire has to be used—foams, carbon-dioxide, or other smothering material. Which method is better—cooling or smothering—depends on what is burning.

On fires in ordinary combustible materials (paper, wood, cloth, excelsior, etc.), which fire-protection experts call Class "A" fires, cooling is more effective than smothering.

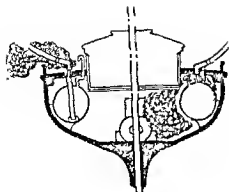
On burning liquids (oils, paints, varnishes) the smothering method is used. Fire-protection experts call such fires Class "B" fires.

There is still another type of fire, known as Class "C," which is smothered. It is a fire in live-electrical equipment such as a motor or switchboard. Using water on fires of this type is dangerous, because the fire fighter may get an electric shock and it may also damage the equipment.

Of course, there are some exceptions to these rules. For instance, if a person's clothing catches fire, the best thing to do

Fighting large fires is a skilled occupation.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS



The fuel tank should be located and vented so that the vapors cannot sink below decks where ignition could occur. The right-hand installation is dangerous; the left-hand one correct.

COURTESY UNITED STATES COAST GUARD

- Prevention of gasoline spillage and leakage • Careful installation of equipment which could be the source of ignition • Provision for adequate ventilation • Maintaining a clean boat.

An excessively large number of motorboat fires and explosions occur just after refueling. Keep in mind that *half a teacup* of gasoline can generate enough explosive vapor to wreck a fifty-foot boat. Also, gasoline vapor, being heavier than air, will flow to the lowest area of the boat—the bilge, which is partially enclosed and therefore can explode more readily.

Before taking on fuel: see that the boat is properly moored • Forbid smoking anywhere on board or nearby • Shut down all engines, motors, fans, and extinguish all burners and pilot lights • Close all cabin ventilating ports, windows, doors, and hatches to prevent the entrance of gasoline vapors • Make sure a filled extinguisher is handy just in case • Determine the exact amount of gasoline needed to prevent overflowing.

While fueling: see that not one drop of gasoline gets below deck; neglect of this has cost many lives. Make sure the nozzle of the hose maintains contact with the tank to ground static electricity.

After fueling: secure the gas tank cap tightly. Wipe up every drop of spillage • Open all ports, windows, doors, and hatches to ventilate the boat for at least five minutes • Make certain that all enclosed spaces are free of gasoline vapors before starting the engine or lighting any burners. (Gasoline is an extremely noxious gas, and your sense of smell is the best detector.)

If the fire is *spread over the floor*, start at one end, and sweep it out by moving your nozzle from side to side as you advance. If the fire is *traveling up a wall*, put it out at the bottom first and then follow it up the wall.

In the case of Class "C" fires, turn off the electric current, if you can, so as to prevent re-ignition. By using the proper type of extinguisher, you will not be in danger of an electric shock if you cannot turn off the current.

Many materials give off poisonous gases when they burn, so move to a position where you will not be inhaling the smoke. When the fire is out, open windows to air the place. If you cannot air the place quickly and easily, *get out and stay out!*

FIRE EXTINGUISHERS

A woman was cooking a meal when the frying pan containing fat caught fire. She called the fire department but, before they arrived, considerable damage had been done. Unbeknown to the housewife, she had one of the most efficient fire extinguishers on her pantry shelf—a box of baking soda (bicarbonate of soda), which would have snuffed out the blaze with a minimum of damage.

Approved fire extinguishers are the best weapons for fighting small fires. They are made to throw a stream of extinguishing agent for a considerable distance so that the operator can stay

Aim your portable extinguisher at the base of the flames and sweep the fire out as you go.

COURTESY THE GENERAL FIRE EXTINGUISHER CORPORATION





In the event of fire, get everyone out of the house first. Then call for the fire department.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

is to roll him in a rug or blanket to smother the flame. Or sometimes, if water would cause serious damage, as in the case of valuable papers, it may be better to smother the fire.

HOW TO FIGHT A SMALL FIRE

When a fire breaks out the first thing to do is to collect your wits and size up the situation. It may keep you from doing something foolish. After seeing that everyone is out of the building, notify the fire department. Then go into action with your extinguisher. Take a position near a door, so any sudden burst of flame cannot trap you. If possible, stand so that the smoke and flame are carried *away* from you. If the fire is in a small room or closet, take advantage of the length of your extinguisher stream to remain at a safe distance.

Always aim directly at the object that is burning (not at the smoke or flame), except in the case of a flammable liquid, where it is important not to splash the liquid, which will spread the fire. If cooking fats, gasoline, or other Class "B" materials are burning in a container, aim a foam or the less favored vaporizing liquid against the inside of the container just above the liquid level; carbon dioxide or dry chemical is aimed along the surface.



CLASS A FIRES

Class A fires may be defined as fires in ordinary combustible materials such as wood, paper, textiles, rubbish, etc. where the quenching and cooling effects of the quantities of water, or solutions containing large percentages of water, is of first importance.



SODA ACID



WATER
PUMP



FOAM



CLASS B FIRES

Class B fires may be defined as fires of flammable liquids, chemicals, greases, gasoline, oil etc. where a blanketing effect is essential.



CARBON
DIOXIDE



DRY
CHEMICAL



FOAM



VAPORIZING
LIQUID



CLASS C FIRES

Class C fires may be defined as fires of electrical equipment, where the use of non-conducting extinguishing agent is of first importance.



CARBON
DIOXIDE



DRY
CHEMICAL



VAPORIZING
LIQUID

* Equipped with a non-conducting horn.

COURTESY HARDWARE MUTUALS

The kinds of extinguishers for each type of fire.

Class "A" fires, if it is long enough to reach the blaze and has a nozzle attached, because the supply of water is not limited as is the case with portable extinguishers.

KINDS OF EXTINGUISHERS

The fact that there are different kinds of fires and different types of extinguishers may seem complicated at first. Actually, it's quite simple once you get a picture of the various extinguishers in your mind and know what they contain. To make things even simpler, extinguishers in office buildings, factories, or on a boat, plane, bus, or train are designed for the kinds of emergencies most likely to happen.

Extinguishers for Use on Class "A" Fires Only

The soda-acid extinguisher: When you turn the extinguisher upside down, sulphuric acid and a solution of sodium bicarbonate mix, forming a gas which generates pressure to force the



The important thing is not to lose your head when a fire starts. This woman is using a lid to smother the fire—a very efficient method. Note the use of the fork to keep her hands away from the flame.

COURTESY LOS ANGELES FIRE DEPARTMENT

safely away from the flame. They can be handled by one person, and, if properly maintained, they are always ready for use. Where a certain class of fire ("A", "B", or "C") is probable, the proper type of extinguisher should be stationed. For example, a gasoline service station should have Class "B" type of extinguishers on hand.

A word of caution, however: portable fire extinguishers contain only enough material for limited operation—usually less than a minute. It is important, therefore, that you do not start it operating prematurely and that you direct it at the blaze in the most effective manner with a minimum of delay.

A garden hose is a very efficient fire-fighting device for

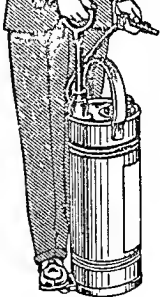
This not uncommon occurrence can be controlled by shutting the oven door until some fire-fighting material can be obtained • Common table salt is very good for smothering a small fire.

COURTESY INSTITUTE FOR SAFER LIVING, AMERICAN MUTUAL LIABILITY INSURANCE COMPANY



The pump tank must be pumped continuously.

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES



is held in one hand while the pump is operated with the other. By pumping hard, you can make the stream travel for a distance of 30 to 40 feet. The tank can be refilled by someone else while you are using it to fight a fire; but you cannot pump it while carrying it.

Extinguishers for Use on Both Class "A" and Class "B" Fires

The *foam extinguisher* is shaped exactly like the soda-acid type, and is operated in exactly the same way. But it is different inside and it contains different chemicals. The outer case contains a solution of sodium bicarbonate and a foam-making ingredient. The inner chamber carries water and aluminum sulphate.

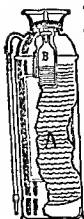
When the extinguisher is turned upside down, and the chemicals mix, a stream that looks like foam comes out of the hose. The extinguisher contains about $2\frac{1}{2}$ gallons of liquid but generates about eight times that amount of foam.

The foam blanket smothers and is, therefore, recommended for flammable-liquid (Class "B") fires. But since the extinguisher contains a great deal of water, it is effective also on fires in ordinary combustibles (Class "A").

The *loaded-stream extinguisher* looks and operates exactly like the gas-cartridge extinguisher; but instead of plain water, it contains a special solution of an alkali-metal salt. The solution is effective on Class "B" fires as well as on Class "A" fires.

Extinguishers for Use on Class "B" and Class "C" Fires

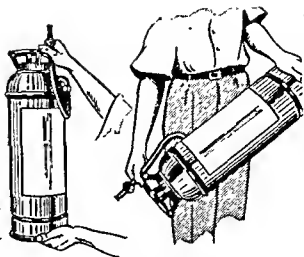
Extinguishers which contain no water can be used on small



The *soda-acid extinguisher* contains a solution of bicarbonate of soda (A) and a small bottle of sulphuric acid (B).
COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

How to pick up the soda-acid extinguisher (left). How to hold the hose while turning it over to start it in operation (right).

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES



water out of the nozzle. The capacity of most extinguishers of this type is $2\frac{1}{2}$ gallons. They provide a 30 to 40 foot stream that lasts for about 60 seconds.

The extinguisher is borne to the fire area by a ring at the top. To operate it, see the illustration. Your right hand must be free to direct the stream on the fire. For some people, it may be easier to set the extinguisher on the floor.

The *gas-cartridge extinguisher* looks very much like the soda-acid type. It operates in the same way, except that, after you turn it over, you have to bump it on the floor. It contains plain water, or water with anti-freeze and, in its neck, a cartridge of compressed gas. When the extinguisher is turned upside down, and the plunger at the top bumped against a hard surface, a pin is driven into the cartridge, releasing the gas which forces the water out through the hose.

The *pump tank* is made in two sizes, $2\frac{1}{2}$ gallons and 5 gallons. The pump tank is carried to the fire by a top handle. The nozzle



The *gas-cartridge extinguisher* contains a bottle of compressed gas in its neck which is punctured by bumping it.
COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

How to carry the gas-cartridge extinguisher, puncture the compressed gas cartridge, and direct the stream on the fire.

COURTESY THE GENERAL FIRE EXTINGUISHER CORPORATION



FACTS ABOUT FIRE EXTINGUISHERS

Type of Extinguisher	Extinguish- ing Effect	USE ON FIRES OF			How to operate	Recharge	Protection from freezing
		Class A	Class B	Class C			
PLAIN WATER: Pump tank	Cooling	Yes	No	No	Pump by hand	After use	Approved anti- freeze chemicals may be added to the water
Gas car- tridge	Cooling	Yes	No	No	Turn over, bump on ground	After use	
WATER AND CHEMICALS: Soda-acid	Cooling	Yes	No	No	Turn over	Annually	Keep in heated cabinet if build- ing is unheated. Never add anti- freeze chemicals.
Foam	Cooling smothering	Yes	Yes	No	Turn over	Annually	
Loaded stream	Cooling and "oxidation inhibiting"	Yes	Yes	No	Turn over, bump on ground	After use	None required to -40° F.
CHEMICAL: Vaporizing liquid	Smothering	Only small surface fires	Yes	Yes	Pump by hand	After use	None required to -50° F.
Carbon dioxide	Smothering	Only small surface fires	Yes	Yes	Open valve at top	After use	None required.
Dry Chemical	Smothering	Only small surface fires	Yes	Yes	Read directions on extinguisher	After use	None required.

COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

dry chemical by means of a special nozzle. The discharge lasts only for 15 to 30 seconds and will travel a distance of twenty-five feet.

The dry-chemical extinguisher in use.

COURTESY UNDERWRITERS' LABORATORIES, INC.



fires in Class "A" materials, but they are not as effective on fires of this type as they are on Class "B" fires. *They are the only ones which may be used safely on Class "C" fires.* The effect of these extinguishers is to blanket and smother the fire.



The vaporizing-liquid type of extinguisher is quite common. In some models, the handle must be pumped.

COURTESY NATIONAL FIRE PROTECTION ASSOCIATION

The *vaporizing-liquid extinguisher* is one of the most familiar types. It contains specially treated carbon tetrachloride and is operated by pumping the handle, or, in certain models, by turning a handwheel. The commonest size contains a quart of liquid and the stream will travel twenty feet for about thirty seconds. It is not recommended by the National Safety Council.

The *carbon-dioxide extinguisher* has a hornlike nozzle through which the carbon-dioxide gas escapes when a valve is opened. The gas blanket smothers the fire and is a non-conductor of electricity. The extinguisher has a maximum range of about eight feet, but best results are obtained by directing the discharge as close to the fire as possible while moving the horn slowly from side to side.

The *dry-chemical extinguisher* depends on the pressure developed by a small cartridge of carbon dioxide to expel the dry chemical through the hose. The extinguisher is operated by opening a valve to release the gas and directing the stream of



The *carbon-dioxide* type of extinguisher is characterized by a horn-like nozzle.

COURTESY WALTER KIDDE & COMPANY, INC.

2. Each day of the year: (a) 800; (b) 200; (c) 50 American homes have a fire.
3. The fumes of carbon tetrachloride are: (a) heavier than air; (b) poisonous; (c) flammable.
4. One of the greatest single causes of fire is: (a) matches; (b) spontaneous combustion; (c) lightning.
5. The best way to detect the presence of gasoline vapors is: (a) sight; (b) smell; (c) strike a match.
6. Oil fires are classified as: (a) Class "A"; (b) Class "B"; (c) Class "C" fires.
7. Electrical fires are classified as: (a) Class "A"; (b) Class "B"; (c) Class "C" fires.
8. Wood fires are classified as: (a) Class "A"; (b) Class "B"; (c) Class "C" fires.
9. The first thing to do when a fire breaks out is to: (a) run for an extinguisher; (b) call the fire department; (c) get everyone out of the building.
10. Portable fire extinguishers contain enough material to last about: (a) one; (b) three; (c) five minutes.

True-False

1. Only professional fire fighters should learn how to put out big fires.
2. Panic usually results from the cry of "Fire!"
3. The best way to overcome panic is to prevent it before it starts.
4. Many people live in the midst of fire risks and never get the least bit excited about them.
5. Vapors may be ignited by the turning off of an electric switch.
6. Kerosene is an excellent solvent to use in kindling fires because it has a higher flash point than gasoline.
7. Poor housekeeping is a cause of fires.
8. The farm presents certain unique fire hazards.
9. A correctly installed lightning rod system is perfect protection against lightning.
10. Damp hay can burst into flame.
11. When a fire breaks out, the first thing to do is to run for an extinguisher.
12. In fighting a Class "B" fire, it is best to turn off the electric current so you won't get a shock.
13. One of the best fire-fighting instruments is a garden hose.

Completion

1. The vapors of gasoline are _____ than air.
2. _____ starts fires by chemical reaction.

TOPICS FOR DISCUSSION

1. Why is it said in the case of fire: "The first few minutes are the most important"?
2. Discuss the value of making plans to combat a fire before one starts.
3. How can the danger from panic be minimized?
4. Discuss the values in "getting excited about fire prevention."
5. What are the risks in using a volatile liquid such as gasoline as a dry cleaner?
6. What are the risks in using carbon tetrachloride?
7. What risks are there in using kerosene or gasoline to kindle fires?
8. Explain how a fire starts by spontaneous combustion.
9. Why is the cigarette a leading cause of fires? Discuss.
10. Recently a fireman was heard to say, "A clean house seldom burns." Discuss this statement.
11. What is a safe way to burn trash?
12. Why is it desirable to have a warm-weather check-up on heating equipment every year?
13. Discuss the advantages of a man developing his own self-contained fire-fighting unit on a farm.
14. What protection can a country dweller take against lightning? Spontaneous combustion?
15. Why are electrical fires increasing in number on farms and country homes?
16. What four suggestions are made for preventing fires in motorboats?
17. What causes most motorboat fires?
18. Discuss the fire-preventive procedures after refueling.
19. On what three things does a fire depend?
20. What three classifications of fires are there? What material is burning in each?
21. What suggestions are given for fighting a small fire?
22. What efficient fire-extinguisher material is generally kept on the pantry shelf?
23. What caution is given in the use of a portable fire extinguisher?
24. Describe three types of fire extinguishers and how to use them on Class "A" fires.
25. Describe two types of fire extinguishers and how to use them on Class "A" and "B" fires.
26. Describe three types of fire extinguishers and how to use them on Class "B" and "C" fires.

SELF-CHECK TESTS

Multiple-Choice

1. Fire snuffs out: (a) 12; (b) 19; (c) 31 lives every day in this country.

CHAPTER 9: TRAINING FOR EMERGENCIES—STORMS

Much publicity is given the relatively few destructive storms which pass through heavily populated areas. Remember, these are rare and seldom attack the same area twice in the same way. The cumulative effects of the smaller storms have been much greater in total damage and loss of life.

As the result of storms, 425 persons die each year.

Injury and property damage result from a variety of causes • Electrical storms cause death from fires started by lightning • Blizzards kill livestock, damage power lines, and isolate whole communities • Hail storms destroy crops, roofing, and windows • Most destructive of all, however, are the severe windstorms called tornadoes and hurricanes.

In one recent year, the property loss from storms was over \$2,000,000,000.

We can prevent ordinary wind damage to our homes by periodic inspections. Loose gates, fences, doors, shingles, and roof siding give the wind a chance to tear things apart. See that walls are adequately braced, that exposed doors have locks, and that missing bolts, nails, and hinges are replaced to strengthen outdoor structures.

Winds lash a southern seacoast • Windstorms uproot trees and tear roofs from houses.

COURTESY WORLD WIDE PHOTOS, INC., AND NATIONAL BOARD OF FIRE UNDERWRITERS



3. Barn fires are mainly caused by three things: lightning, spontaneous combustion, and misuse of _____.
4. Most motorboat fires and explosions occur just after _____.
5. Fire depends on three factors: a combustible substance, heat, and _____.
6. Fighting Class "A" fires by _____ is more effective than by smothering.

Matching

- | | |
|---------------------------|-----------------------------------|
| 1. Volatile | 1. Burns easily |
| 2. Flammable | 2. Vaporizes easily |
| 3. Non-flammable | 3. Cleaning solvent |
| 4. Carbon tetrachloride | 4. Ignition by a chemical process |
| 5. Spontaneous combustion | 5. Difficult to burn |
| 6. Class "A" fire | 6. Burning electrical wiring |
| 7. Class "B" fire | 7. Burning wood |
| 8. Class "C" fire | 8. Burning oil |

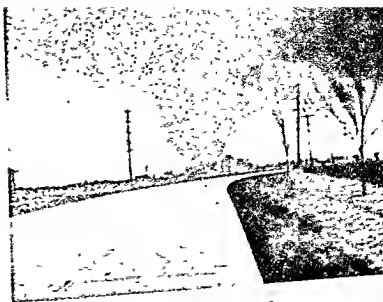
This aerial view shows how a tornado can destroy everything in its path as it passes through a city.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS



A tornado is characterized by the funnel-shaped cloud which often reaches to the ground.

COURTESY UNITED STATES DEPARTMENT OF COMMERCE, WEATHER BUREAU



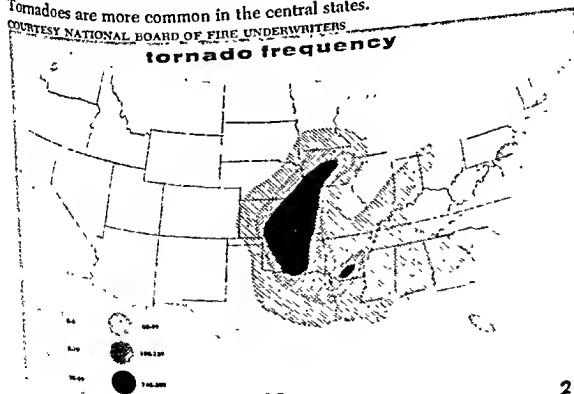
southwest corner of the basement of a frame building is the next safest place. In a house without a basement, lie on the floor, preferably under a table or bed, as protection from flying objects. Brick, stone, or concrete-block buildings are unsafe because the walls are too heavy to be carried by the wind and may collapse. Buildings with long-span unsupported roofs are frequently demolished.

Reinforced concrete or steel-frame construction buildings offer relatively safe shelters.

Tornadoes are more common in the central states.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

tornado frequency





The only thing of value, left from a windstorm which destroyed this school, was a desk.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

TORNADOES

The word tornado comes from Spanish and French words meaning thunder and thunderstorm. However, we think of it as a violent rotary storm of small diameter, compared with hurricanes. The dictionary gives "cyclone" as nearer the true name, but popular usage makes the tornado smaller than a cyclone. All winds revolve. A tornado revolves in a tighter, faster circle—a concentrated rotary storm. It features a funnel-shaped cloud. Where the point of the funnel touches objects on the ground, destruction can be almost instantaneous.

The "cap" of a tornado is fairly small, averaging about 1000 ft. in diameter. Although the tornadic winds rotate up to hundreds of miles per hour, the storm itself moves along at the moderate rate of speed of 30 to 40 mph.

The U. S. Weather Bureau advises as follows:

Tornado warnings are broadcast all through the area concerned. Keep your radio or television set tuned for the latest information. If you seem to be in the path of a tornado, turn off your electricity and gas services in order to minimize the danger of fire, asphyxiation, or electric shock. Doors and windows on the *north* and *east* sides of the house should be blocked open to vent the structure and reduce possible damage.

A *storm cellar* is the safest place to be in a tornado. The

everything flew upward. Luckily I was not touched—just scared.”

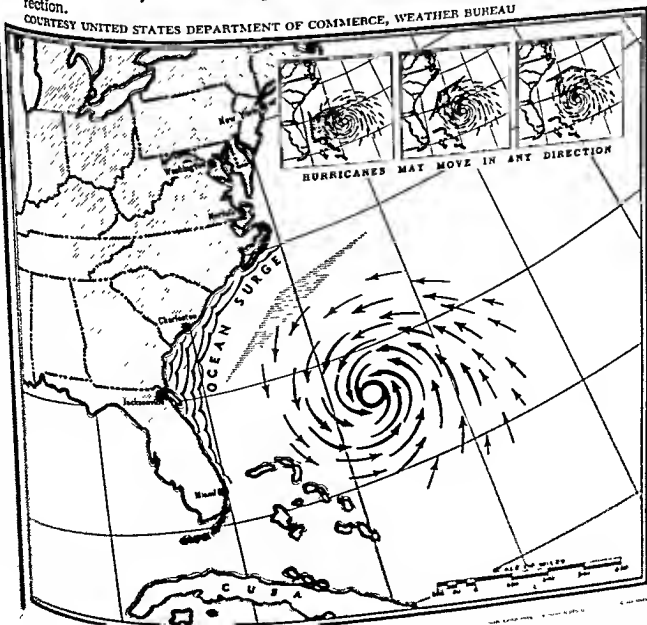
Later, authorities who traced the path of the tornado said, “We haven’t found all of the houses yet.”

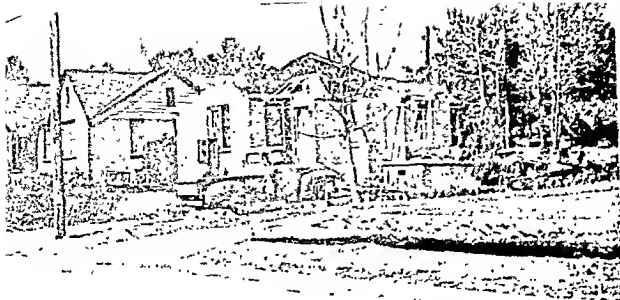
HURRICANES

These storms come from the sea and are rotating masses of air, whirling at speeds of over 75 mph, with a diameter of several hundreds of miles. Energy may be released at a rate equivalent to the detonation of several thousands of atomic bombs *each second*. The center of a hurricane, called the “eye,” is an area of dead calm. The average diameter of the eye is about fourteen miles. Although the winds blow around the storm center at high speeds, the position of the storm itself usually changes at a moderate rate, generally about 12 mph.

Hurricanes usually start over tropical waters and move in a northwesterly direction.

COURTESY UNITED STATES DEPARTMENT OF COMMERCE, WEATHER BUREAU





COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

A tornado is strangely selective. It may ruin one house in a row and pass the others by relatively unharmed.

Since tornadoes travel at moderate speeds, an automobile driver usually can outrun one without difficulty by traveling at right angles to the path of the storm. If the automobile should become bogged down, it is safer to leave the car and take shelter in a roadside ditch, because experience has shown that frequently the car may be rolled over several times and crushed.

Recently, an eyewitness gave a dramatic account of the approach and damage done by a twister. The woman said, "I was standing by the kitchen window and saw this black funnel-shaped cloud moving in from the plains. It was about 150 feet high and mushroomed up from a five-foot-wide eye at the center. As it moved slowly toward my house, the neighbors' roofs started to fly upward. A tree in my front yard was pulled from the ground and disappeared in front of my eyes.

"And then the twister struck my house. The roof and everything started to fly. The chimney, the furniture, and just about



This house exploded as a tornado passed over it. Open doors and windows on the lee side to vent a building to prevent such an explosion.

COURTESY NATIONAL BOARD OF FIRE UNDERWRITERS

Hurricane information is obtained by air force planes flying directly into the storm center to track its path. To receive accurate information, keep your radio or television set tuned to a local station which will broadcast storm warnings as they are received. If power fails, use your car or battery-powered portable radio. Because this method allows warnings of twelve or more hours, no one need be caught unprepared.

Most loss of life from hurricanes results from drowning. As the storm moves forward, it piles up high waves which may rise as much as six feet in 30 minutes. Because of the high winds preceding the storm by several hours, it is exceedingly dangerous to travel during later stages. Therefore, coastal inhabitants should move inland as early as possible.

Items which are not bolted down, such as garbage cans, porch furniture, garden tools, and signs should be placed indoors where the wind cannot make them weapons of destruction. Branches of trees, which may sway against roofs or windows, are most likely to cause damage. Awnings should be removed or raised and all windows boarded up.

If the center of the storm passes directly over you, there

A radar-scope picture of the perfectly formed "eye" of a typhoon (hurricane) which struck Okinawa with wind velocities of 172 mph.

COURTESY UNITED STATES AIR FORCE



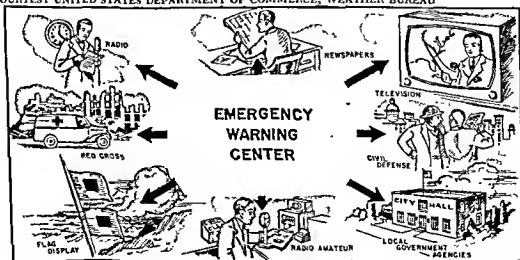


COURTESY UNITED STATES AIR FORCE

Air force planes are used to track hurricanes so that adequate warnings can be broadcast to the public before the destructive fury of the storms arrive.

The information of the approach of a storm is broadcast through all means of public communication from the Emergency Warning Center of the Weather Bureau.

COURTESY UNITED STATES DEPARTMENT OF COMMERCE, WEATHER BUREAU



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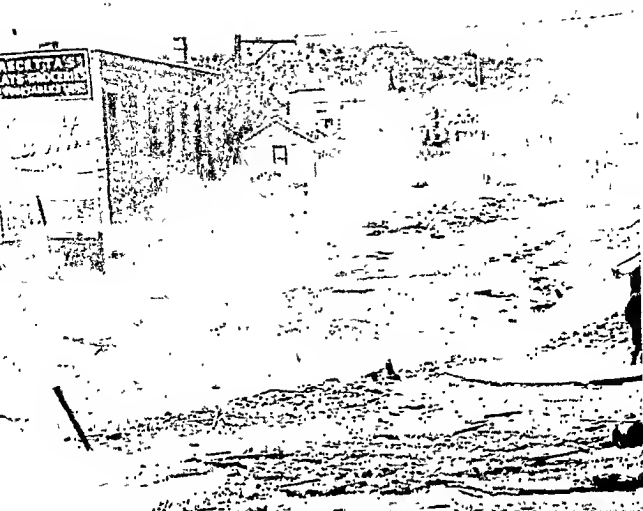
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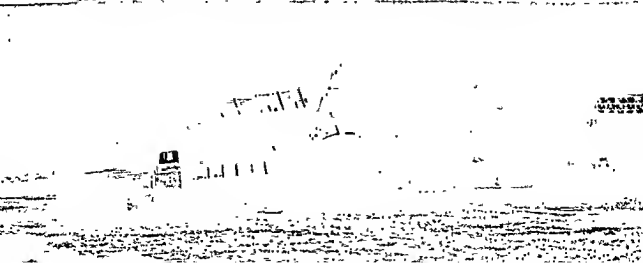
COURTESY AMERICAN NATIONAL RED CROSS
This debris is the result of a storm-caused flood.

will be a lull in the wind lasting from a few minutes to half an hour. Make emergency repairs, if necessary, but stay close to a safe place because the wind will return *suddenly*, blowing from the opposite direction, usually with even greater violence.

If the wind *shatters a window* on the windward side of the house, *open doors and windows* on the lee side to equalize the pressure or the roof may blow off.

The force of the wind was so great that it overturned an airplane which fell on a truck. Then the wind deposited another truck on top of the plane.

COURTESY UNITED STATES AIR FORCE



Because power failures and broken water mains are common, sterilized utensils should be filled with drinking water before the storm starts. *A bath tub full of fresh water* will prove useful. After service is restored, it is important to *boil all water* until you are assured by the health department that the supply from the mains is safe.

Be alert to prevent fire. Hurricane damage frequently causes lowered water pressure, which makes fire fighting difficult.

Avoid traveling after a storm. The roads are needed by emergency equipment. And they are not always safe because power lines are frequently blown down. If you do have to travel, be especially careful of fallen wires as they may be charged with high voltages, and contact with them could prove fatal.

FALLEN ELECTRIC WIRES

A recent newspaper item pointed out the dangers of charged dangling wires. It told of a motorist who was trapped in his wrecked car for 45 minutes. A wind-broken pole had fallen across his car. The wires, carrying 4,000 volts, came to rest on top of the automobile.

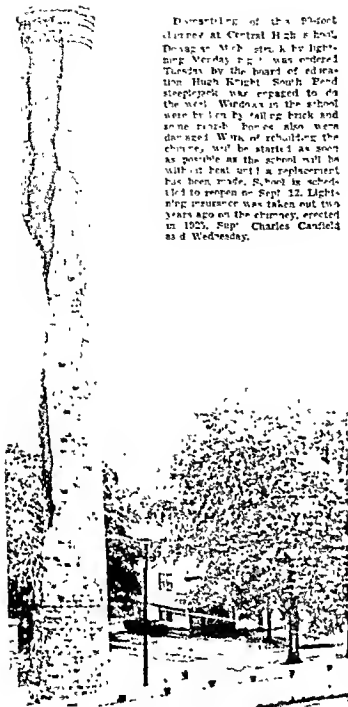
Luckily, a police officer, who witnessed the accident, warned the driver to stay inside the car. He knew that the rubber tires insulated the vehicle. The rescue was made after the utility company's crew cut off the power.

Had the motorist stepped to the ground, his leg would have become a conductor between the charged car body and the

Fallen electric wires are often charged with high voltages. These fallen wires were caused by the automobile striking the pole, but they are often found after a violent storm. Keep away from them.

COURTESY LONG BEACH POLICE DEPARTMENT





Damaging of the 90-foot chimney at Central High School, Denver, which struck by lightning Monday night, was ordered Tuesday by the board of education. Hugh Knight, South Ford steeplesmith, was engaged to do the work. Windows in the school were broken by falling brick and some north houses also were damaged. Work on rebuilding the chimney will be started as soon as possible as the school will be without heat until a replacement has been made. School is scheduled to reopen on Sept. 12. Lightning insurance was taken out two years ago on the chimney, erected in 1925. Supr. Charles Canfield said Wednesday.

Storm

The results of a lightning bolt striking a high chimney.

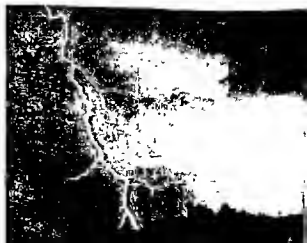
COURTESY INDEPENDENT PROTECTION CO., INC.

ground; and he would have been electrocuted. The motorist owes his life to the quick-thinking police officer's emergency training.

Lightning is Nature's artillery.

COURTESY INDEPENDENT PROTECTION CO., INC.

218





COURTESY INDEPENDENT PROTECTION CO., INC

The inside and outside of a home struck by lightning.

LIGHTNING

Nature's artillery—lightning—is riding on the wings of every thundercloud. Are you in a lightning-storm area?

In one recent year, 44,800 fires were started by lightning.

Lightning is funny. Most lightning strikes as it goes up—not down. First a leader streaks out from a cloud, followed by others which advance the tip in steps of about 200 ft. When a leader reaches the ground, the current increases tremendously, and the main lightning stroke jumps back from the ground to the cloud.

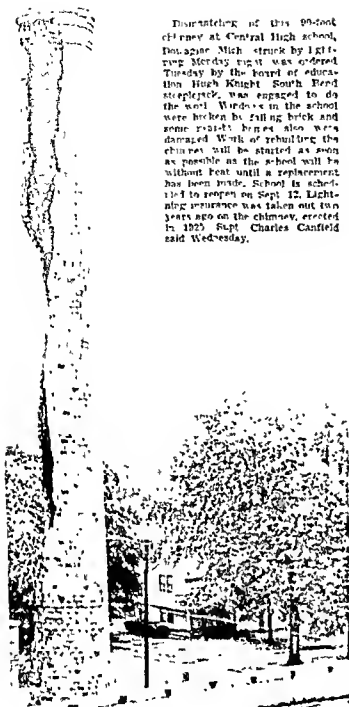
As a charged cloud rolls along, an opposite charge is induced over several square miles of land. This charge tends to concentrate on projecting objects. If you stand in such a charged field, you will feel your hair beginning to rise. *That's the time to lie flat on the ground or in a ditch.*

You are in danger when you are higher than any other projection in the area. Riding a bicycle, tractor, or horse makes you a prime target. Sitting under an umbrella on a flat beach, swim-



A lightning bolt struck this tree while the cattle took refuge from the driving rain. Note that it is the only tree in the area.

COURTESY INDEPENDENT PROTECTION CO., INC.



Dismantling of this 99-foot chimney at Central High school, Pontiac, Mich., struck by lightning Monday night was ordered Tuesday by the board of education. Hugh Knight South Bend steeplejack, was engaged to do the work. Windows in the school were broken by falling brick and some inside bones also were damaged. Work of rebuilding the chimney will be started as soon as possible as the school will be without heat until a replacement has been made. School is scheduled to reopen on Sept. 12. Lightning insurance was taken out two years ago on the chimney, erected in 1925. Supt. Charles Canfield said Wednesday.

Stc

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COURTESY INDEPENDENT PROTECTION CO., INC.

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Nature's artillery—lightning—is riding on the wings of every thundercloud. Are you in a lightning-storm area?

In one recent year, 44,800 fires were started by lightning.

Lightning is funny. Most lightning strikes as it goes up—not down. First a leader streaks out from a cloud, followed by others which advance the tip in steps of about 200 ft. When a leader reaches the ground, the current increases tremendously, and the main lightning stroke jumps back from the ground to the cloud.

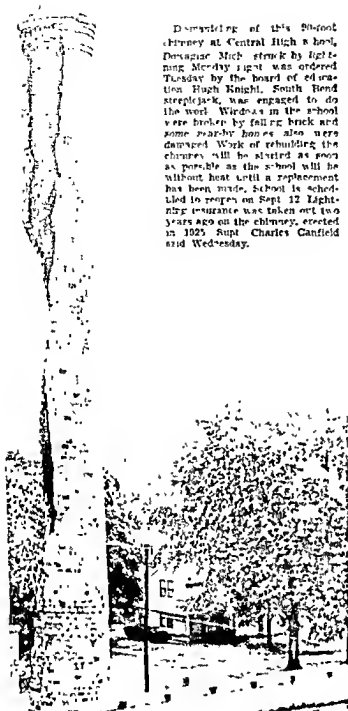
As a charged cloud rolls along, an opposite charge is induced over several square miles of land. This charge tends to concentrate on projecting objects. If you stand in such a charged field, you will feel your hair beginning to rise. *That's the time to lie flat on the ground or in a ditch.*

You are in danger when you are higher than any other projection in the area. Riding a bicycle, tractor, or horse makes you a prime target. Sitting under an umbrella on a flat beach, swim-

A lightning bolt struck this tree while the cattle took refuge from the driving rain. Note that it is the only tree in the area.

COURTESY INDEPENDENT PROTECTION CO., INC.





Dismantling of this 90-foot chimney at Central High school, Des Moines, Iowa, struck by lightning Monday night was ordered Tuesday by the board of education Hugh Knight. South Bend steeplejack, was engaged to do the work. Windows in the school were broken by falling brick and some nearby houses also were damaged. Work of rebuilding the chimney will be started as soon as possible as the school will be without heat until a replacement has been made. School is scheduled to reopen on Sept. 12. Lightning insurance was taken out two years ago on the chimney, erected in 1925. Supt. Charles Ganfield said Wednesday.

Stor

The results of a lightning bolt striking a high chimney.

COURTESY INDEPENDENT PROTECTION CO., INC.

ground; and he would have been electrocuted. The motorist owes his life to the quick-thinking police officer's emergency training.

Lightning is Nature's artillery.

COURTESY INDEPENDENT PROTECTION CO., INC.



If a lightning bolt should strike, the current, running through the damp layer, can turn the sap into high-pressure steam which explodes the tree and kills any living creature under it.

Some of the safer places to wait out a storm in the out-of-doors are in a ditch or ravine, under a cliff, or in a dense forest. (Because there are so many trees, the chances of your tree being struck are slight.) If you do have to remain in level open country, lie flat on the ground.

Stand away from a *fireplace*, with its chimney extending above the house. *Metallic objects* such as the sink, radiator, or bathtub are connected to pipes which attract electricity. A *radio*, *television set*, and *telephone* have wiring circuits which extend to the poles outside and are prime targets. The safest place inside of the home is in the center of a living room.

TOPICS FOR DISCUSSION

1. Discuss the most destructive types of storms.
2. How can you minimize the damage caused by storms?
3. Describe a tornado.
4. What preventive measures will reduce damage to a house caught in the path of a tornado?
5. Where is the safest place to be in a tornado? Least safe place?
6. Describe a hurricane.
7. How does most loss of life through hurricanes occur?
8. Discuss the suggestions given to minimize hurricane damage.
9. Explain how an automobile can become charged with electricity when contacted by fallen power lines.
10. How can you tell that you are standing in a charged field in which lightning is about to strike?
11. What are the most dangerous places of refuge out-of-doors during a lightning storm?
12. What are the most dangerous points of refuge in the house during a lightning storm?

SELF-CHECK TESTS

Multiple-Choice

1. Storms kill about: (a) 400; (b) 800; (c) 1200 people each year.
2. A tornado center moves along at a speed of: (a) 40 mph; (b) 100 mph; (c) 200 mph.

You're In Danger . . .



**ON A
TRACTOR**



**NEAR
WIRE FENCES**



**UNDER
LONE TREES**



**HILL TOPS AND
OPEN SPACES**

Choose Shelter In . . .



**RODDED
BUILDINGS**



**THICK
TIMBER**



AUTOMOBILE



**RAVINE
OR DITCH**

In The Home—Keep Away From:



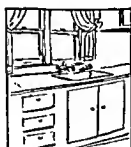
**SCREEN
DOORS**



FIREPLACES



**OPEN
WINDOWS**



**METAL
OBJECTS**

Unsafe and safe places in a lightning storm.

ming, or boating raises you above the level of the surrounding area. Standing under a single tree is the worst place to be.

CHAPTER 10: YOU'RE A PEDESTRIAN

In our modern motor age, it is important for a person on foot to know that there are regulations made to protect him, even though some restrict his liberty. For instance, he is king on the sidewalk, but a trespasser on the highway—except in a marked-off crosswalk. Because the pedestrian is not surrounded by a 3,000 lb. suit of armor to ward off the beating he may receive in a contest with a motor vehicle, he must take all possible precautions to avoid such a conflict.

In one recent year, 8,200 pedestrians were killed and 150,000 injured in accidents involving motor vehicles.

INTERSECTIONS

All crosswalks are for your protection—use them. Motorists expect you in crosswalks, and there alone you have the right of way. Usually crosswalks are indicated on the street in advance of the intersection, so that drivers are warned. But, when using

Dangerous crossings may be marked to warn pedestrians, but nothing will work for those who disregard such warnings.

COURTESY LONG BEACH POLICE DEPARTMENT

A pedestrian has his rights but it's sometimes impossible to demand them. Alertness pays off better in emergencies.



3. The safest place to wait for a tornado to pass is: (a) in a car; (b) on the open road; (c) in a roadside ditch.
4. The average diameter of a hurricane's eye is about (a) 14 miles; (b) 50 miles; (c) 100 miles.
5. A hurricane center moves at a speed of: (a) 72 mph; (b) 36 mph; (c) 12 mph.
6. The safest place out-of-doors in an electrical storm is: (a) in a thick forest; (b) under a beach umbrella; (c) in a wooden boat.
7. The safest room of the house in an electrical storm is the: (a) bathroom; (b) living room; (c) kitchen.
8. (a) 100; (b) 200; (c) 150 people are killed each year by lightning.

True-False

1. Most loss of life from storms occurs from the relatively few destructive ones which pass through heavily populated areas.
2. A tornado is a rotary storm of relatively small diameter.
3. The safest place to stay in a tornado is in a brick building.
4. Tornadoes release energy at a rate equivalent to that of several thousands of atomic bombs each second.
5. A lull in a hurricane indicates the center of the "eye."
6. A driver will get electrocuted if he stays in a car upon which high-voltage wires have fallen.
7. Most lightning strikes upward.
8. Standing near a lone tree is very dangerous in an electrical storm.

Completion

1. A _____ is a concentrated rotary storm that generally occurs inland.
2. A _____ is a concentrated rotary storm of large diameter.
3. The center of a hurricane is called the _____.
4. The center of a tornado is called the _____.
5. Most loss of life from hurricanes results from _____.

Matching

- | | |
|------------------------|----------------|
| 1. Tornado | 1. Hurricane |
| 2. Hurricane | 2. Cyclone |
| 3. Eye | 3. Large storm |
| 4. Funnel-shaped cloud | 4. Tornado |

Some cities have had to place restricting chains to keep pedestrians from crossing at dangerous places.

COURTESY AMERICAN AUTOMOBILE ASSOCIATION

sense, will never cross in front of a street car or bus because he is hidden from the view of oncoming motorists.

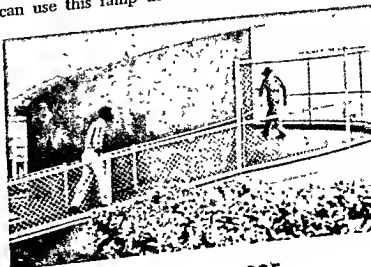
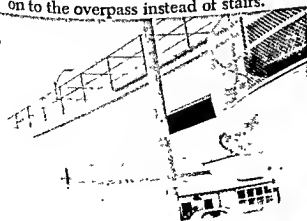
In one recent year, 30 people were killed and 670 injured while standing in a safety zone.

THE SAFEST WAY TO SCHOOL

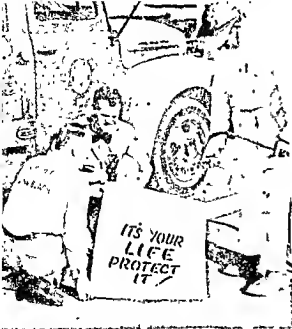
Not all street intersections are equally safe for pedestrians to cross • Some have very little traffic while others are heavily congested • Some are marked with crosswalks; others have no markings • Some intersections have traffic lights to aid you • Others have stop signs • Still others have no controlling devices.

On the way to school, most students have to cross several intersections. If you analyze each intersection, it is possible, in

A pedestrian overpass. Notice the chain-link fence to prevent people from crossing at street level. Baby carriages can use this ramp that takes people on to the overpass instead of stairs.



Yaur're a Pedestrian



The police and street departments spend lots of money and time on stenciling surface signs to remind the pedestrian that safety is important.

COURTESY LONG BEACH POLICE DEPARTMENT

the crosswalk, be just as alert as if it did not exist. Too many pedestrians assume that they are perfectly safe just because the space is marked. However, a driver may not notice the signs, his vision may be defective, or he may be moving too fast to respond.

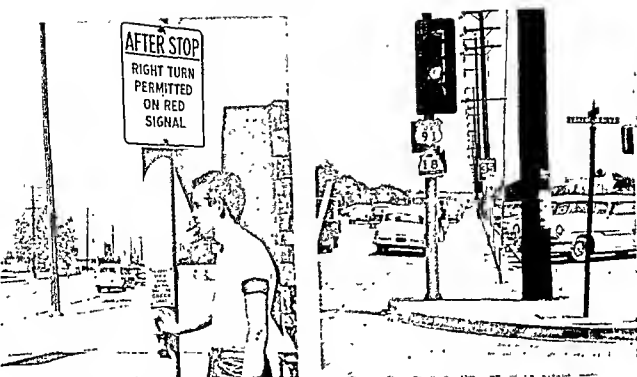
In one recent year, 1600 people were killed and 50,170 injured in the U. S. while legally crossing the street at intersections.

A pedestrian, who wishes to live a long and fruitful life should face traffic whenever he is on a highway or roadway without sidewalks—or when he is in a safety zone or crosswalk. In this way, he is always aware of traffic conditions and can act in the event of an emergency. A pedestrian, using common

The "scramble" system of lights stops all vehicular traffic for the time that pedestrians use the roadway.

COURTESY LONG BEACH POLICE DEPARTMENT





Some intersections contain a control button for the pedestrian to press when he wants to halt vehicular traffic in order to cross the highway. After pressing the button, wait until the light changes. This may take a moment, as the mechanism works on a delayed basis • On especially dangerous intersections, pedestrian controls are separate from traffic lights. Both controls are seen in this picture.

most cases, to lay out a route which will by-pass the really dangerous points and reduce the risk of an accident.

A suggested class project is to make a 3-D model of the school and neighborhood. A piece of plywood, 4' x 8' and $\frac{1}{4}$ " thick, will make an excellent base. On it, a map of the streets may be drawn or traced, and you can use markers of cardboard or wood as models of buildings, traffic control devices, and assisting officers or traffic patrol members. Mount these on the model in the position they normally occupy.

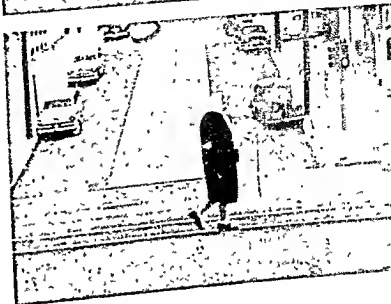


This pedestrian control has a clock which tells the pedestrian just how long he has left before the light changes. Drivers find this valuable, too.



COURTESY MARKEL SERVICE, INC.

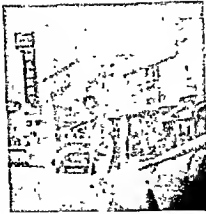
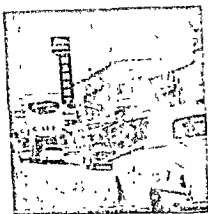
Notice this "double negative" picked up by a camera car in San Francisco. Both the pedestrian and a car are going through a red light • Our camera car approaches the intersection and has the right of way but the pedestrian does not look • Even the camera car is threatening the pedestrian's safety; she looks neither to right nor left.



Almost every victim of such an accident is *without driving experience*. This means that he *does not understand the problems of the driver*. Many people do not realize just how far a car must travel before it can be brought to a stop at various speeds • Others fail to understand how much time is required to change the direction of moving vehicles • Others rely on such unknown qualities as the condition of a car's brakes, a driver's vision, or the road surface, which might be oily or icy in spots • Still others are not aware that a pedestrian in dark clothing is almost invisible at night.

If you have to walk on the roadway at night, tie something white on your body so that you will be seen easier.

COURTESY BOY SCOUTS OF AMERICA



COURTESY MARKEL SERVICE, INC.

A defensive walker takes no chances. In this sequence the teen-ager waited until the camera car stopped before stepping in front of it, even though he did have the right of way on the crosswalk. Are you a defensive walker or do you place your life in the hands of an approaching driver?

and cities, so naturally no signs are posted to warn drivers of every illegal pedestrian in the middle of the block. Yet he frequently pops out from behind a parked car. Only alert, *defensive driving* can prevent an accident.

In one recent year, 2,970 jaywalkers were killed.



Inattention and crossing at unmarked places put a pedestrian's life in double jeopardy.

COURTESY AETNA LIFE AFFILIATED COMPANIES

TOPICS FOR DISCUSSION

1. Why is it necessary to pass regulations restricting the freedom of pedestrians?
2. Why is it important for a pedestrian to avoid a conflict with a motor vehicle?
3. Explain how the safest way to school can be determined.
4. What danger exists even when using a marked-off crosswalk?
5. What danger exists in crossing in front of a stationary bus?
6. Discuss why most pedestrian-motor-vehicle accidents involve non-drivers.
7. What is defensive walking? Discuss.

SELF-CHECK TESTS

Multiple-Choice

1. The safest intersection for a pedestrian to cross has: (a) a marked-off crosswalk; (b) a stop sign; (c) a traffic officer.
2. In one recent year: (a) 3000; (b) 6000; (c) 9000 jaywalkers were killed.
3. Most pedestrians killed by motor cars are: (a) good drivers; (b) poor drivers; (c) without driving experience.

True-False

1. All intersections are equally dangerous for pedestrians to cross.
2. Safety zones are complete protection for those who wait for a bus.
3. Dress in light-colored clothing if you have to walk on a roadway at night.
4. Crosswalks provide positive protection for the pedestrian because motorists are required by law to stop if the crosswalk is occupied.
5. Defensive walking is as important for a pedestrian as defensive driving is for a driver.

Completion

1. A pedestrian is king on the sidewalk but a _____ on the highway.
2. A pedestrian who crosses the roadway between intersections is called a _____.
3. A pedestrian in _____ is almost completely invisible to a driver at night.



Notice just how short a motorist's *sight distance* is at night.

COURTESY CHEVROLET MOTOR DIVISION, GENERAL MOTOR CORPORATION

In one recent year, 54,900 jaywalkers were injured.

Just as drivers must learn defensive driving, pedestrians must learn defensive walking. A defensive walker never puts himself in such a position that his life depends on a driver. If he suspects every driver of being drunk, crazy, and blind, and walks accordingly, he has a better chance to stay alive and enjoy all the advantages of modern civilization.

In one recent year, 840 pedestrians were killed and 5,300 injured while walking on rural highways.

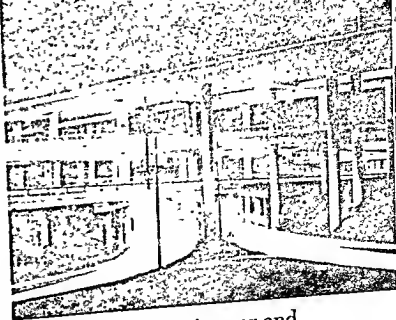
This young lady is happy but her smile may not last long. Notice that she is carrying packages so that her sight is obstructed in the direction that a car might approach.

COURTESY LONG BEACH POLICE DEPARTMENT



The four-level interchange, shown in the preceding picture, makes a striking photo as it is lit up at night by the street lights and the headlights of passing automobiles.

COURTESY CALIFORNIA DIVISION OF HIGHWAYS



perfect decisions if you expect to preserve an expensive car and your health, and stay alive and out of jail.

Most parents are frightened when a son (or daughter) announces that he wants to drive the family car for the first time. They have read and heard frequently of teenage accidents. Their friends' children have been involved. They know what it is to drive, themselves. While the 15 to 24-year-age group comprise only 14.8% of all drivers, and do only 10% of the driven mileage, they do have 27% of all fatal accidents.

Many parents think you have *no interest in safe driving* because of *the way you act as a passenger*. Answer these questions privately, to yourself: Do I constantly urge my dad or other drivers to pass other cars? • Do I "horse around" in the family car and cause angry scolding? • Do I know the facts about speed limits in and out of town? • Does a good driver move his steering wheel very much on a clear straight road?

The expert driver is admired by his passenger for the confidence he breeds by his careful driving • One way to impress your parents with your interest in becoming an expert driver is to join a safety organization such as the SAFE-TEENS. If you are interested, write to Judge Frances King, SAFE-TEEN, INC., P. O. Box 1047, Lynnwood, Wash.

COURTESY HARLEY DAVIDSON MOTOR COMPANY AND SAFE-TEENS.

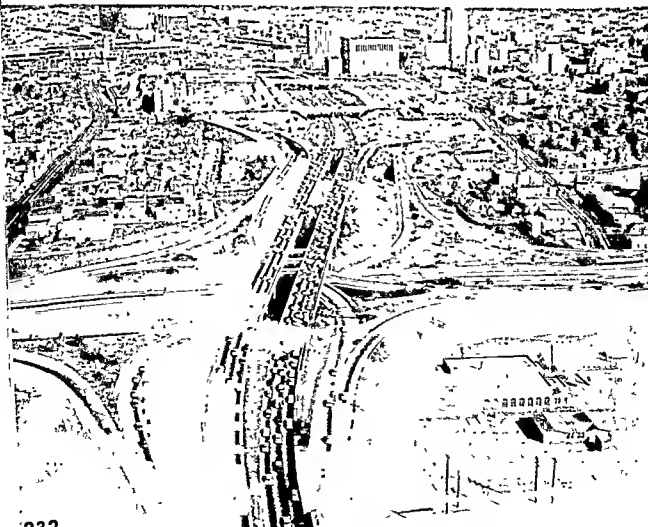


CHAPTER 11: SO YOU WANT TO DRIVE!

Whether you drive a bicycle, motor scooter, motorcycle, an automobile, or are just a *passenger* in a car, you are subject to laws, rules and plain *know-how* connected with safe driving. Today's traffic is highly complex. Millions of cars; confusing traffic systems; special signs and rules; two-way, four-way, and eight-way road networks present problems requiring immediate,

An entirely new system of expressways has had to be designed to carry automobiles more swiftly and safely through the centers of large cities. This is a view of the Hollywood Freeway as it passes through the center of Los Angeles, California.

COURTESY CALIFORNIA DIVISION OF HIGHWAYS





The Garfield School, Phoenix, Arizona, starts the training of safe drivers and safe pedestrians at a very early age.

COURTESY MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY

700 per week—over 38,000 each year. More Americans are killed by automobiles *each year* than were killed in *three years of the Korean conflict*.

If an army of youthful arsonists set a series of school fires that in a single year took the lives of 8,200 of their schoolmates, and injured 365,000 more, the entire nation would be stunned. Yet that was one year's tragic toll of teenagers killed and injured in traffic accidents, and even now, it does not cause much conversation at home. Muscular reaction, mental alertness, and sensory perception are all at their best in the young. One might expect them to rate very high as drivers—and many of them do. But the fact remains that, as a class, their record is way below that of older, experienced drivers.

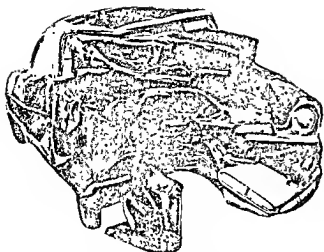
DRIVER EDUCATION

To counteract this tragic fact, modern education includes classes in pre-driver as well as driver education. There's more to driving than operating the controls. Many of you probably

Safety education in our motorized age is so important that we are developing new traffic-safety classes for the younger student.

COURTESY MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY





A wreck, similar to this one, takes the life of an American every 15 minutes and injures another one every 20 seconds.

• Does he wait till he gets to a stop sign or red light before putting his foot on the brake? • Do I admire the person who drives recklessly and daringly—and do I brag about it around the house?

Expert driving ability does not arrive automatically at the legal driving age, nor does *safety-mindedness*. Both require long periods of study. If you have impressed your parents with your seriousness and alertness while taking this safety course, they won't dread the hour when you make the announcement, "Today's the day."

THE ACCIDENT PROBLEM

The number of persons injured and killed each year in motor-car accidents can only be presented as statistics, which can never give the true picture of human anguish, misery, suffering, and death these accidents cause. Traffic accidents kill one American every 15 minutes and injure another every 20 seconds. This means that over 100 persons are killed every day—over

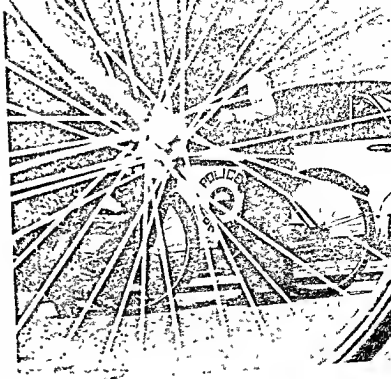
Bloodstains on the sidewalk point up the seriousness of an accident in any motorized vehicle.



COURTESY LONG BEACH POLICE DEPARTMENT

CYCLE SAFETY

When you ride your bicycle on the street or highway, you are required to observe the same traffic laws that apply to motorists with the single exception that you need no driver's license. Drivers of motor scooters and motorcycles require drivers' licenses.




A modern bicycle can be only as efficient as the care it receives. Never have better bicycles been built; they are sturdier, lighter, and more comfortable—but their safety and efficiency depend on proper care and use.

Mechanical failures contribute to the cause of serious accidents; loose handle bars, a bad tire, an unsteady saddle, a weak chain link, worn bearings, a broken pedal, or loose spokes may spell disaster. Keep your machine in tip-top shape.

This bicycle rider's license is given to students who have shown a knowledge and respect for safety while riding a bike.

COURTESY AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA

BICYCLE

RIDER'S**LICENSE**

Issued to _____

(Name of School)

This is to certify that a written test and a riding skill test have been passed satisfactorily.

Principal

Sponsor

6090

More advanced pre-driver training is given in these Drivetrainers.

COURTESY AETNA LIFE AFFILIATED COMPANIES



already know how to start and stop your high-powered family car, but do you *know how to drive*? Accident records indicate that you may not know safe driving fundamentals even when you are 16 or 17—unless you begin to learn today.

One of the primary reasons for the bad record is that many have “picked up” their driving from friends, relatives, and parents—many of whom are not qualified to give this vital instruction. It is a proved fact that young drivers who have undergone competent instruction in driver education are involved in only half as many accidents as are the same number of their nge group who have not had such training.

In recognition of the value of driver education, most insurance companies offer insurance premium discounts of up to 15% to young drivers who have completed such a course in high school.

A close-up view of the screen to show what a student might see.

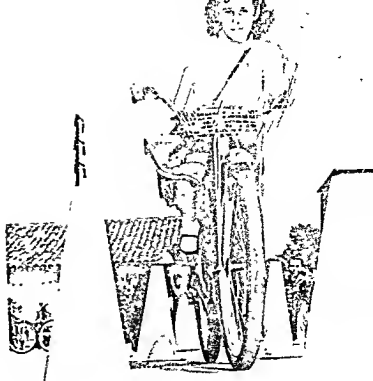
COURTESY AETNA LIFE AFFILIATED COMPANIES



iving

This young bicycle rider proves her skill by riding through a stanchion-lined path.

COURTESY LONG BEACH POLICE DEPARTMENT



LEGAL REQUIREMENTS

The law requires that you drive on the right side of the road, just as motorists do. Many cities have laws restricting your riding on sidewalks because pedestrians have the right of way there. Traffic signals and stop signs apply to you as well as motorists. According to law, you must have certain safety equipment on your cycle. It includes: A warning bell or horn • A head light • A red reflector button or tail light visible from the rear if you ride after dark.

In one recent year, 480 bicycle riders were killed and 25,000 injured by collisions with cars.

COMMON-SENSE DEFENSIVE RIDING

Walk your bike across a busy intersection; you have more control that way • Tie packages or books securely to the handle bars, or keep them in a basket or rack designed to hold them; otherwise, they may slide around and distract your attention at the wrong moment • Keep passengers off the handle bars or fender; it is very dangerous because you may sway into the path of a car, and you can't see properly in front of you with such a load • Ride single file if several of you are going in a group. This allows safe passing for vehicles overtaking you • Hitching on to a moving vehicle is unlawful in most cities—and definitely unsafe.



COURTESY MARKEL SERVICE, INC.

Wet roads are slippery. Also watch out for deep ruts or car tracks which might cause you to skid into the path of an oncoming motorist.

AUTOMOBILE DRIVER CHARACTERISTICS

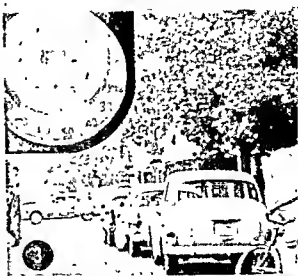
The Expert Driver

What makes an expert driver? The answer is in two parts: skill in judging conditions and handling the car, and having the correct mental attitude toward driving. You can spot an

Expert drivers compete only in sponsored activities. These fellows are helping to prepare a route for a school economy run.

COURTESY CENTRAL PETROLEUM CORPORATION





We are actually approaching in a car at 20 mph. This camera sequence takes place in less than a second. Note how a careless fellow places his life in our hands.

Riding along a line of parked cars is dangerous because a motorist may open his door in front of you, or may turn out without warning. Be prepared for all emergencies by being alert at every moment. Driving in traffic is a full-time activity—it requires your constant attention.

Defensive driving calls for you to be alert for such emergencies as this when riding alongside of a row of parked cars • This is why it is dangerous to pass a car on the right side. The car may turn into an intersection and squeeze you against the curb.

COURTESY LAMBRETTA DIVISION, INNOCENTI CORPORATION, BY TED JACQUES



expert by his smoothness—the way he blends with the flow of traffic without jerky starts, stops, or turns. Expert drivers have “perfect timing.” An expert anticipates his next move long in advance. He never darts from lane to lane. You are not afraid to drive with him. He always has control of the car, and never depends on others, or on luck.

Respect for *traffic laws* is a requirement for all experts. They know that traffic laws are made to protect them. It's good common sense to obey them • The expert also obeys the *unwritten laws*—those golden rules which guarantee a fair share of the road for the rest of us • Bad manners are out of place anywhere, but in traffic they can lead to serious consequences. *Courtesy* is the mark of the expert.

But how does a person become an expert driver? • In the first place, he practices smooth driving to develop good habits • He also studies the poor mental attitudes of poor drivers so that he will be able to recognize them in himself. Then he makes the necessary corrections before a bad habit becomes too firmly established. None of us is perfect. Each of us can improve, *provided we see and recognize the need for improvement.*

The Normal and Abnormal Driver

Most of us like to think of ourselves as being normal, average people; and this means, of course, being normal, average driv-

Eddie Bracken demonstrates that the inattentive driver is not always abnormal, but he might as well be. He is certainly not using his head • In the second picture, he may be thinking about his family troubles. Perhaps his child is sick and he is rushing home to be at her side. Calm down in such cases, or let someone else drive for you.



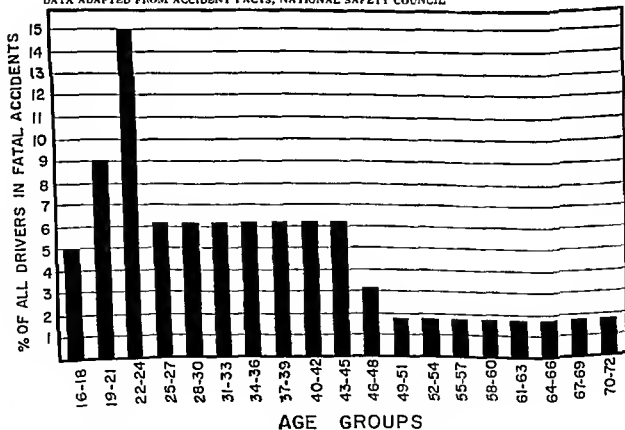


COURTESY GENERAL PETROLEUM CORPORATION

At left, this high-school driver is getting last-minute instructions before starting on an economy run. For the victor, at right, skill and knowledge pay off in the long run.

Notice how the fatality rate increases dramatically in the first three age groups. A new driver is cautious, and supervised by his parents; then, as his skill increases and he becomes independent and overconfident, the fatality rate shoots upward.

DATA ADAPTED FROM ACCIDENT FACTS, NATIONAL SAFETY COUNCIL



used to regular traffic conditions, they grow overconfident—and the fatality rate almost doubles.

There are, of course, some people who, by nature, will always be problem drivers. They are abnormal a great deal of the time and they are dangerous whenever they get behind the wheel of a car. Problem drivers usually are grouped into three classifications: the egoist, the show-off, and the emotionally disturbed driver.

The Egoist

The egoist is one of our most difficult drivers. He believes that he is the only important person on the road, and shows it by completely disregarding the rights of others. Actually, he never grew up. True, his body changed in size, but he retained his childhood brain.

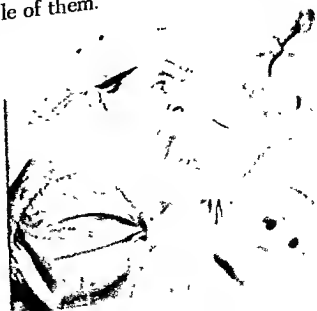
All of us are egoists to some extent, but we have learned to get along with others. We recognize that each of us has certain rights—and a normal person demands no more than his fair share.

The extent to which an egoist will go to abuse the rights of others is limited only by fear of punishment. He may ignore traffic lights, stop signs, and speed limits when no traffic officer is in sight. He may pull out of line, even if it means driving on unpaved shoulders to get to the front. He drives fast through a water puddle and doesn't care who gets splashed.

His horn is for "blasting" other drivers out of his way. Inconsiderately, he will park very close against the end of another car when it isn't necessary. If there are two parking spaces, he may park in the middle of them.

The emotionally disturbed driver is "all tensed up." He must first conquer himself before he can control his car, in an emergency.

COURTESY HOME & HIGHWAY MAGAZINE





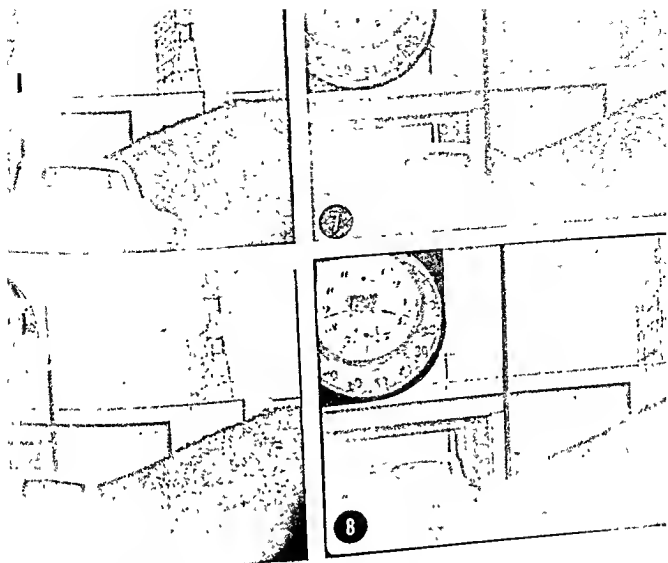
COURTESY HOME & HIGHWAY MAGAZINE

The angry driver (left) loses his self control and is in no condition to drive
• The egoist (right) thinks that the road was made especially for him. He crowds other cars and blasts them out of his way with his horn.

ers. However, everybody acts abnormal at times. Do you remember times that you felt out-of-sorts, irritated, angry, or emotionally upset over something that happened at home or at school? When you're aroused to anger, you say and *do* things that aren't normal. In other words, you lose your self-control.

The same thing happens to the average good driver when he gets irritated, angry, frustrated, or emotionally upset over something that happens because of traffic conditions or because of some unpleasantness at home, school, work, or play. Such a driver becomes abnormal—temporarily. He slams his car around turns, cuts sharply in and out of traffic, fumes inside at traffic delays, and loudly expresses annoyance with what he thinks are stupid mistakes of other drivers. Such an abnormal driver is out “looking” for an accident—and *he frequently finds one*.

Accidents happen to the normal driver, too, as the result of *overconfidence*. As was pointed out in the first chapter, the overconfident person loses his awareness of danger as he becomes skilled by doing something often. He gets careless—and an accident results. Hence beginning drivers, in the 16-18 year age group, have about half as many fatal accidents as do those in the 18-21 year age group. Drivers who have just learned to drive face the unknown and are cautious. They don't want to wreck the family car. Then, as they develop skill and become

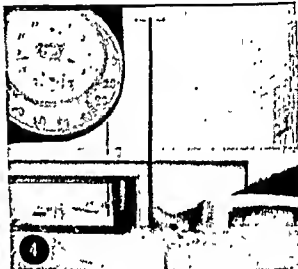
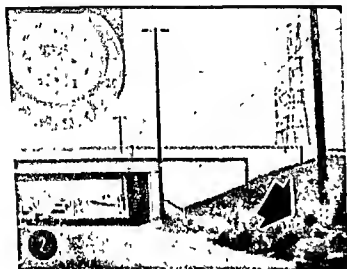
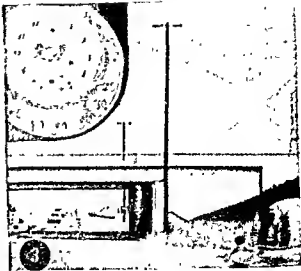
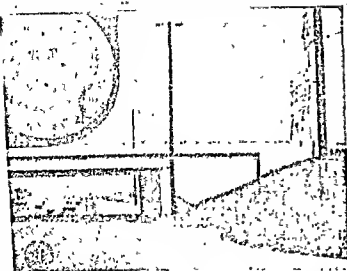


COURTESY MARKEL SERVICE, INC.

- The successful athlete receives the plaudits of the crowd, the sports experts, and his fellow players.

Not all people have exceptional abilities. Some never achieve their desired recognition in athletics or in class because they do not have the mental or physical ability to excel in any sport or subject; and they are not satisfied with quieter achievement—such as being *well liked* by everyone or *finding a specialty of their own*.

Teenage emotions are strong. Shyness and feelings of inferiority worry many of us at this age, and the desire for recognition is extreme. Some teenagers, who quit trying to get the normal kind of recognition, turn to wearing loud clothes, to combing their hair in unusual ways, to boasting, fighting, and to making other forms of noise. Often such a person is suffering from an *inferiority complex* which he is trying to cover up by an assumed attitude of superiority. When a show-off drives a car in the presence of an audience, he will make tire-screaming



This sequence shows how an egoist driver passed our camera car on the right, raising a cloud of dust, although the left passing lane was clear all the time.

An egoist has a primitive confidence in his driving ability and drives fast and hard to prove it. His self-interest breeds the attitude in him that if an accident does happen, it is entirely the other fellow's fault for not staying out of his way.

Do you know such a driver?

The Show-off

Everybody likes recognition; it's a basic human need. However, the way a person achieves this recognition makes the difference between good and poor mental attitudes • Mature individuals secure recognition by completing their everyday tasks to perfection • Class leaders are popular with everyone • The better students receive their congratulations from teachers, parents, and friends. They are recognized as responsible, capable individuals, and are often elected to student-body offices

PERSONALITY SELF-CHECK TEST for NON-DRIVERS

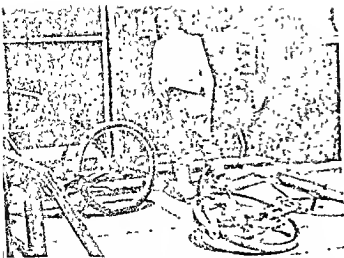
Never do it 0 - 1	Sometimes do it 2 - 3	Just average— half and half 4 - 5 - 6	Often do it 7 - 8	Always do it 9 - 10
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Test yourself. Write answers on separate sheet of paper.

1. He rides his bicycle on crowded sidewalks or on school grounds in violation of regulations. _____
2. He leaves his bicycle sprawled across the sidewalk, usually blocking a store entrance instead of parking it on the side. _____
3. He crowds into the cafeteria lunch line in disregard of the rights of others. _____
4. He talks to friends in the middle of a hall or passageway without any consideration for those who wish to pass. _____
5. He runs through crowded halls, bumping and shoving other students out of his way. _____
6. He comes late to class. _____
7. He makes unnecessary noise and wise-cracks in class. _____
8. He hollers at friends as he passes a classroom. _____
9. He is sent to the office for violation of school regulations. _____
10. He combs his hair in unusual ways. _____
11. He dresses in loud colors. _____
12. He takes his time in crossing a street which has heavy traffic, because he knows that he has the right of way in a crosswalk. _____

Scoring

- 0- 10 You are a good citizen. Keep it up.
 11- 20 You are a fair citizen. Some improvement is needed.
 21- 40 You are a borderline case. Better get started on a program of self-improvement.
 41- 60 You are a self-centered person. Change before it is too late.
 61-120 Better walk till you learn what is wrong with your attitude.



A thoughtless bicycle rider leaves his machine in people's way instead of placing it in the rack provided by the manager. Will he be just as thoughtless when he grows up and operates a motor car?

starts and screeching stops to impress the onlookers. He will even do it when he is alone, *just to impress himself*. Have you ever seen such a driver?

Unfortunately, the show-off is not aware of why he acts this way. He believes his actions are normal. He just doesn't realize how little other people care about his childlike performances.

Do you know a show-off?

The Emotionally Disturbed Driver

A disturbed or excited person's driving judgment suffers when he becomes angry, or thinks his girl doesn't love him. Frequently he expresses his feelings by driving recklessly. He is impatient with other drivers. He uses his horn unnecessarily when traffic is blocked and then tries to make up the lost time by weaving in and out from one lane to another. Such persons are all right except when excited, but they are upset over trifles. You can't depend on them.

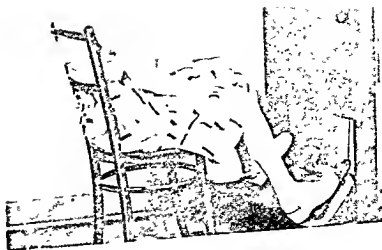
Do you know an emotionally disturbed person?

The following actions characterize a self-centered person.

A thoughtless motorist blocks the crosswalk so that pedestrians have to get out of their assigned safety area to pass around him.



A reaction-time testing device measures the time required to move your foot from the accelerator to the brake pedal. It measures only the *simple* reaction time.



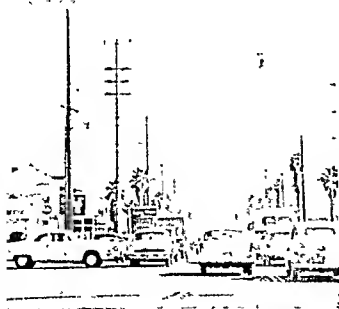
mph, it requires almost four car lengths to get your foot onto the brake pedal! These figures apply to normal drivers. *Inattentive drivers*, those with a *slower reaction time*, or drivers *under the influence of alcohol* take considerable more time to reach the brake pedal.

Measuring reaction time. Most reaction-time measuring devices are based on the controls of an average car. A *timing device* and *light signals* are incorporated. As the signal light is changed from green to red, the driver lifts his foot from the accelerator pedal and steps on the brake pedal. The time necessary to complete this operation is registered on the timing device as the *simple reaction time* of the driver.

Under actual driving conditions, a person's reaction time is always longer than the measured simple reaction time because *he may not be expecting an emergency*; therefore his reaction may have to be a choice of responses. He may have to stop the car or turn the steering wheel to avoid an accident, or he may only have to press the horn button. This is known as *complex reaction time* which, under actual driving conditions, is about $\frac{2}{3}$ of a second for an average driver.

Braking Distance

After a driver's foot reaches the brake pedal, it takes an additional distance to stop the car, known as *braking distance*, and it depends on several factors: the speed of the car, the condition of the road surface, the efficiency of the brakes, the con-



This thoughtless motorist tried to go through a yellow warning light and got caught so that he couldn't back out. Notice how he is blocking the curb lane of traffic.

PHYSICAL EQUIPMENT OF THE DRIVER

It takes a certain amount of dexterity to be able to drive a car skillfully. More important, it takes knowledge of how certain physical limitations affect one's ability to control the car quickly and surely. By understanding your strengths and weaknesses, you can become a better driver.

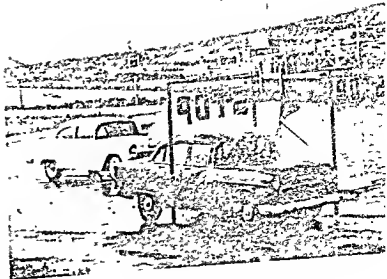
Reaction Time

Occasionally, a show-off driver is heard to say something like this, "I can stop on a dime and give you five cents change." Such a boast is meant to show how good he is in stopping his car. However, you cannot act instantaneously (right now!). It takes a measurable amount of time for a message to be transmitted from the eyes to the brain, and then to the muscles. In a *learned habit action*, as in driving, the presence of an emergency situation causes the driver to react quickly. And yet, even if the driver is very skilled and attentive, it takes about $\frac{1}{4}$ of a second for the message to arrive and the driver's foot to reach the brake pedal. This is known as reaction time. (*Note that this does not include the time necessary to stop the car after the brakes have been applied. It is just the time necessary to get your foot on the brake pedal.*)

Even though most drivers have a reaction time of a split second, are you aware of what may happen in that instant? If you have a normal reaction time, and are driving 20 mph, the car will roll 22 feet—or better than one car length, *in the time necessary to place your foot on the brake pedal!* At 60

Driving

Your actual stopping distance is also influenced by the condition of the roadway and your tires as this dramatic picture shows. Both drivers applied the brakes at the same time, but the tire treads of the one car were poor and so this car skidded through the glass barrier.



COURTESY B. F. GOODRICH COMPANY

The lesson to be learned from these facts is that it is *impossible* to stop on a dime. To delude yourself in this matter is to lull yourself into a false sense of security. You must always drive so as to maintain a minimum safe distance between your car and the one you are following. This safe distance is equal to your reaction-time distance plus your braking distance.

Visual Acuity

A driver must be able to see clearly. Vision is most often measured by reading various-sized letters on a chart. A person who can read $\frac{5}{8}$ -inch letters at 20 feet is said to have 20/20 vision; one who can read only the larger letters at 20 feet has faulty vision. He should not drive unless he has been fitted for correct lenses by an optometrist; the glasses must be worn while driving.

Field of Vision.

A person's field of vision includes *side* as well as *front* sight.

The machine at left incorporates a vision tester and a glaring light which may be thrown on to see just how well the person can read the letters with glaring light • Right: A field-of-vision tester.

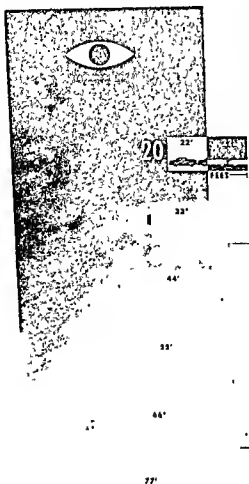
COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES





AVERAGE STOPPING DISTANCE

ON DRY LEVEL CONCRETE SURFACE



Ford passenger car length bumper to bumper 16.5

NOTE: Make allowance, with respect to stopping distances shown, of approx. 5% variation occasioned by various run data and compilation systems. Figure based on tests of cars having brakes in clean condition and on dry level concrete faces. Make allowance for bad surfaces, poor brakes. Reaction distance is basic average reaction time of three-quarters second.

Additional copies of this illustration in chart form may be obtained by writing Information Services, Ford Motor Company, The Americas Road, Dearborn, Michigan.

COURTESY FORD MOTOR COMPANY

The average stopping distance varies with speed.

dition of the tire treads, and even the extent of tire inflation. *This does not include reaction time.* The reaction-time distance plus the braking distance equal the total stopping distance.


The *stopping distance* is composed of the reaction-time distance plus the braking distance.

COURTESY TRANSIT CASUALTY COMPANY

STOPPING:

Reaction + Braking = Stopping Distance





Speed greatly extends braking distance, so ~ **START STOPPING SOONER!**

Be Extra
CAREFUL



AFTER
DARK

Three times as many fatal accidents occur at night as in the daytime hours. If the night-accident toll could be cut back to the daytime rate, 15,000 more people per year would remain alive.

COURTESY CHEVROLET DIVISION, GENERAL MOTORS CORPORATION

pupils of the eyes to contract to a pinpoint and, afterward, it may take as long as a full minute for them to open fully again. This means that a driver may be driving blind for a few seconds and with reduced vision for almost a minute. At 60 mph, such a car may travel 10 car lengths with a blind driver at the wheel and for the remainder of a mile operated by a driver with partial vision.

Glare is dangerous to any driver but especially to one whose eyes are extra sensitive. In general, people with blue or gray eyes are more affected than are those with dark eyes.

Understanding the dangers of glare, a good driver always lowers his lights to prevent blinding an oncoming motorist. In doing so, he is protecting his own life as well as that of the other

The automotive-type lamps of this tester are shone directly into the person's eyes. Then a dimly lit number is flashed on the screen and the time interval measured until the person can see the number.

COURTESY SHELL SPOTLIGHT



A driver must be able to see what is happening on each side while at the same time paying attention to the situation directly in front of him.

Some people are limited in this ability and are, therefore, said to have "tunnel vision." They are at a great disadvantage when in heavy traffic complicated by side-flow traffic. A field of vision of 180° is considered normal, while one of 140° or less is a handicap.

Few young persons are afflicted with tunnel vision but those that are must understand this limitation. They must learn to compensate by turning their heads from side to side where side traffic exists.

Depth Perception

Depth-perception ability is necessary when judging distances. Drivers who have faulty depth perception must use extra caution in following other vehicles because this lack of judgment may lead to a rear-end collision. Such drivers must never try to pass another car unless the road ahead is entirely clear. Obviously, the lack of this ability can be the direct cause of a serious accident.

The test for depth-perception ability is illustrated here. The student operator tries to line up the cars' front ends by pulling on two strings attached to them. The difference in alignment is measured for the score.

Night Vision

Night accidents are more numerous than daytime accidents. Glaring headlights "blind" oncoming drivers. They cause the

A depth perception tester is designed about the movement of two model automobiles. The person being tested moves the cars until she thinks they are lined up. The score is the amount the cars are apart.

COURTESY GENERAL PETROLEUM CORPORATION



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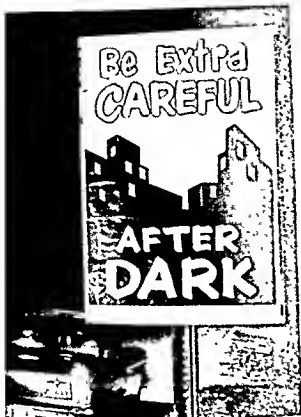
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COURTESY CHEVROLET DIVISION, GENERAL MOTORS CORPORATION

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COURTESY SHELL SPOTLIGHT



Glaring headlights are one of the dangers of night driving. A courteous and sensible driver always switches his headlight beams with the foot control to avoid blinding oncoming drivers.

COURTESY CHEVROLET DIVISION, GENERAL MOTORS CORPORATION

driver • The skilled driver also looks slightly to the side of the road or closes one eye to minimize the effects of glare until the approaching car passes • He reduces speed for safety.


In rain, fog, or on black-top roads without proper marking at center and side, night driving reduces all visual acuity a great deal. Even under the best conditions, you have only a fraction as much illumination as on a cloudy day!

An *advantage* of night driving is that lights of oncoming cars precede the vehicle around curves and over hilltops, warning us of their approach.

A night-vision testing device is usually composed of a light-tight box into which the student looks • Letters are illuminated by a light which can be dimmed to test how well they can be read under reduced light • A glaring bright light can be switched on to test the person's vision under glaring conditions.

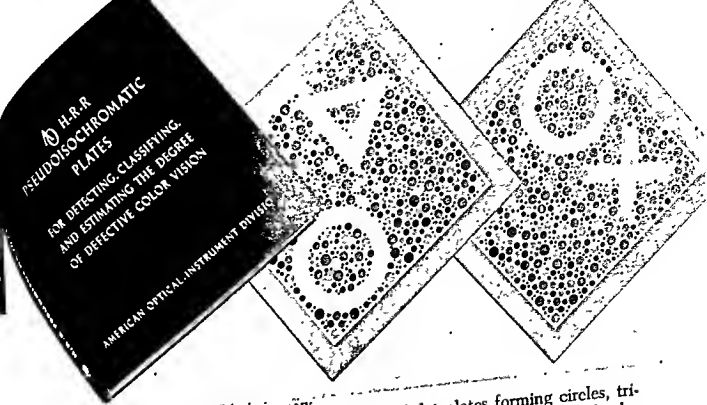
Color Blindness

About 5% of all male drivers cannot see certain colors; this defect is seldom found in females. Anyway, color blindness is rarely the cause of an accident because people learn to judge the



Head and tail lights of passing cars illuminate a freeway interchange to make this unusual nighttime photo.

COURTESY CALIFORNIA DIVISION OF HIGHWAYS



COURTESY AMERICAN OPTICAL COMPANY

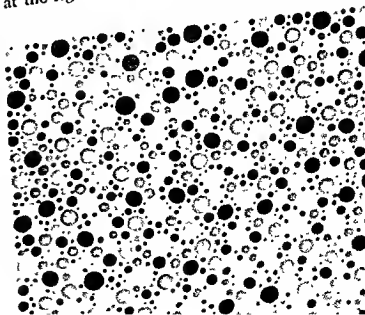
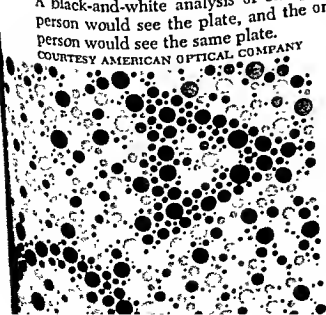
This color-blind test book is made up of colored-dot plates forming circles, triangles, and crosses. The symbols are arranged in various combinations of color and position in the four corners of each plate. The first two plates, shown here, contain the four symbols in colors which even color-blind people can see.

color of signal lights by the traffic flow and by their location on signal-light standards. In addition, many states use a combination of colors in their signal lights to assist color-blind drivers. For example, the red stop light may be orange-red, and the green signal may be blue-green. Very few color-blind drivers are blind to these combinations of colors.

Warning signs are frequently made in special colors to warn drivers with normal vision. Color-blind drivers must train themselves to recognize the shapes of the signs.

A black-and-white analysis of one plate. The left view shows how a normal person would see the plate, and the one at the right shows how a color-blind person would see the same plate.

COURTESY AMERICAN OPTICAL COMPANY



COURTESY MARKFL SERVICE, INC.

Long hours of driving, or driving under difficult conditions, can cause fatigue. An expert driver will stop the car periodically and get some rest.

FACTORS OF INEFFICIENCY

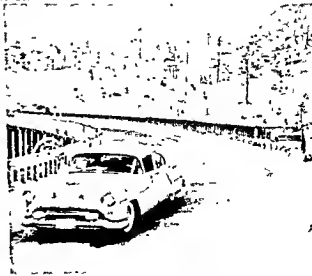
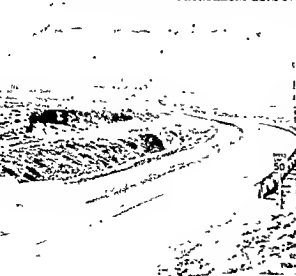
Fatigue

No matter how good your health may be, there are times when your muscular coordination is poor • Lack of sleep lowers your efficiency greatly • Too many hours of easy driving may cause sleepiness. Drivers tested for muscular coordination after six hours of steady driving scored very low on tests, but the surprising part of it was that *they did not feel tired*.

The means of combating driving fatigue are frequent stops. For instance, cross-country bus drivers are required, by company regulations, to stop every two hours to restore their keenness; this is good practice for all drivers.

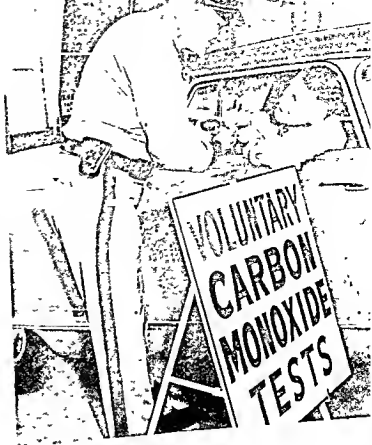
Long trips and easy driving conditions are often the cause of highway hypnosis. Stop at a roadside stand every two hours • Icy, hilly roads, rain, and fog are very fatiguing. Avoid long periods of driving under such conditions.

COURTESY GENERAL PETROLEUM CORPORATION



These Washington State Police have set up test stations for carbon monoxide. They have found a surprising number of cases in which the car's interior has enough of the poisonous gas to dull the driver's senses. Most carbon monoxide seeps in from a defective exhaust system or from the exhaust pipe of the car ahead in slow-moving traffic.

COURTESY WASHINGTON STATE PATROL



Carbon-Monoxide Poisoning

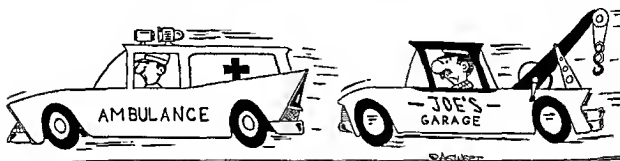
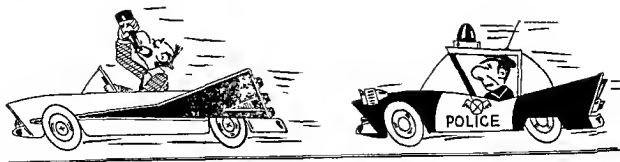
Carbon monoxide has no odor or color, and is deadly even in small amounts. It is found in the exhaust fumes of all automobile engines. Enough carbon monoxide is generated in a few minutes, by an idling engine in a closed garage, to cause drowsiness and even death.

Carbon monoxide may seep into a closed car through a defective exhaust system. To avoid any risk, check your exhaust line regularly. Driving with a ventilator window open is always a good safeguard.

Alcohol

If alcohol and driving are mixed, the resulting cocktail is deadly. Besides lowering the speed of reaction time, alcohol impairs muscular coordination, vision, and judgment. Perhaps the greatest danger from drinking is the false sense of security which the drinker develops. He takes chances which would shock him when sober. To ride with a driver who has been drinking is a *proved* risk. He may be hilarious in spirit, but so careless or overconfident that he cannot cope with emergency situations which are sure to be aggravated by his condition.

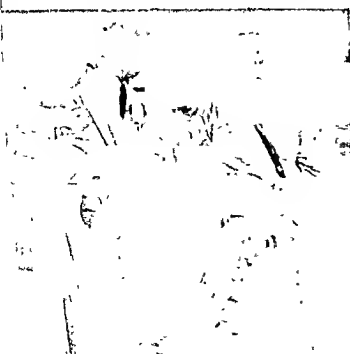
Drinking drivers were involved in about 50% of all fatal accidents reported in one recent year. They are such a serious



COURTESY TRAVELER'S INSURANCE COMPANIES

menace in today's traffic that many states are suspending the license of a driver convicted of being under the influence of alcohol.

Police use accurate testing devices to measure the amount of alcohol in the system. One of these tests is to make the suspected driver blow up a rubber balloon. The trapped breath is then passed through chemical solutions which measure the alcohol content accurately.



He couldn't walk—but he drove.

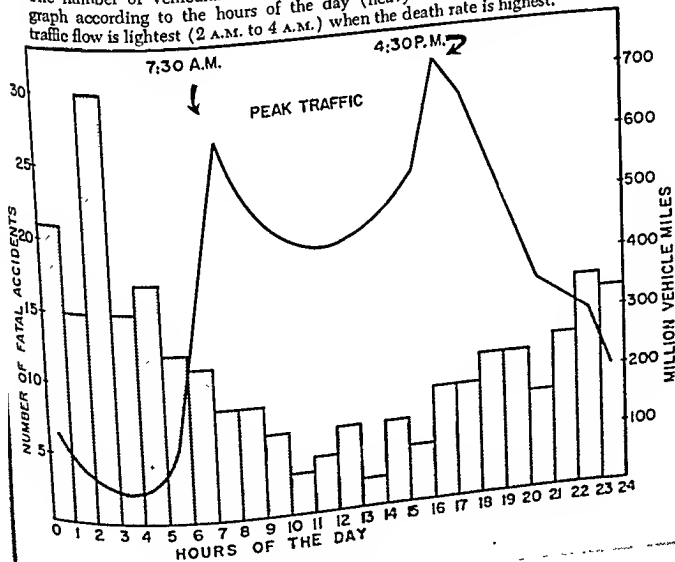
COURTESY TEXAS DEPARTMENT OF PUBLIC SAFETY

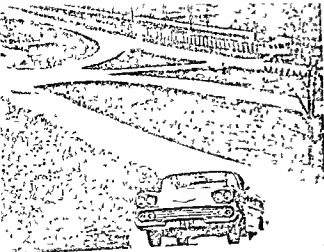


COURTESY TEXAS DEPARTMENT OF PUBLIC SAFETY

This police laboratory technician has a full-time job to analyze the breath contents of traffic-accident drivers. He can determine the exact alcoholic content of the blood, and this evidence is accepted in court. • Alcoholic drivers have become a major problem, as these samples affirm. Remember that samples are taken only from drivers involved in an accident, and only from those who are obviously drunk.

This chart represents the number of deaths that have occurred on California Freeways over a two-year period. Note that the most number of deaths occurred between 2 and 3 A.M. Liquor dispensing bars close (by law) at 2 A.M. The number of vehicular miles (density of traffic) was also plotted on the graph according to the hours of the day (heavy solid line). Note that the traffic flow is lightest (2 A.M. to 4 A.M.) when the death rate is highest.





Driving

Gravity, a natural force, is slowing this car going up a hill, but can pull the car headlong when going downhill.

COURTESY CHEVROLET MOTOR DIVISION, GENERAL MOTORS CORPORATION

LAWS AFFECTING DRIVING

Nature's Laws

We live in a world in which many natural forces operate. We cannot change them, so we learn to live with them. Many of these forces are directly involved in the operation of an automobile, and some of them are so important to its safe operation that drivers must understand their effects if they expect to remain alive.

Three of the forces most useful for you to know are *traction* or *friction*, *inertia*, and *centrifugal force*.

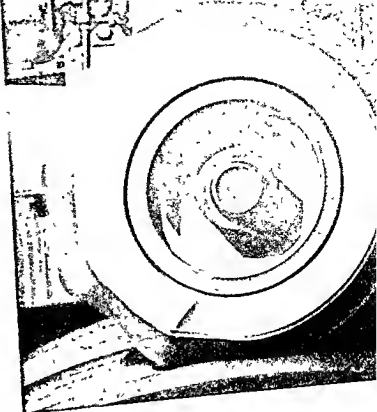


When you disregard Nature's laws, you know it!

COURTESY HARLEY DAVIDSON MOTOR COMPANY

Centrifugal force is so great that it causes a standing wave to form in a tire that is spun at a rate of 110 mph. Do you want to be riding that fast with the tires in this shape?

COURTESY UNITED STATES RUBBER COMPANY



Traction

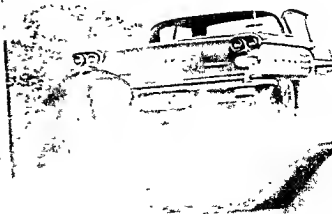
Traction is the friction between the road and tires. We just can't get along without traction. We couldn't start or stop our car nor turn a corner without it.

Most of the time we have plenty of traction. But driving in rain or snow causes the whole traction picture to be changed. Skids, sideslips, immobility, and loss of braking power can result.

On slippery surfaces, traction can be maintained by smooth driving; that is, gradual starting, driving at moderate speeds, making gentle turns of the steering wheel, and stopping gradually. Pumping the brake pedal is much more effective in stopping a car on a slick roadway than is a steady brake application, which might lock the wheels and start the car skidding.

These spinning wheels change the friction energy into heat, and the softened rubber smokes • Hard stops also change friction into heat. The marks are clearly visible.

COURTESY HOT ROD AND MOTOR TREND MAGAZINES





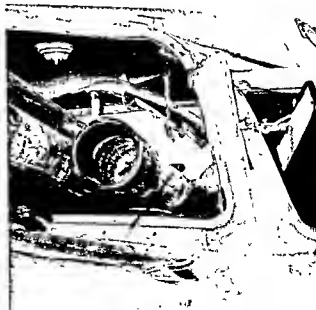
Ice and snow make traction a difficult problem.

Inertia

Inertia is a force which keeps you moving once you have started. When you take your foot off the accelerator, the car keeps on going for awhile due to inertia.

It takes force to stop a moving car. This can be ordinary friction against the air when coasting to a stop. Or it can be

Inertia caused this load of pipe to continue moving forward when the truck was stopped suddenly because of an accident. A body in motion tries to continue in motion.



Driving

Inertia increases as the *square* of the speed. The energy of the two cars was expended in crushing the steel.

COURTESY TEXAS DEPARTMENT OF PUBLIC SAFETY



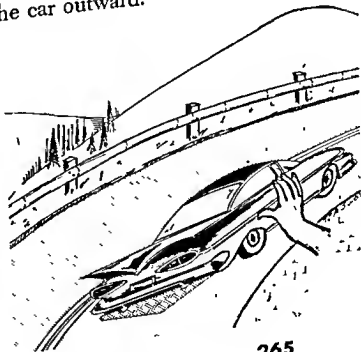
the friction of the brakes. It can also be applied by the crumpling of a steel body as it crashes into something. Incidentally, the reason it crumples is because it absorbs the energy of a crash and the metal is too weak to stand the assault of energy.

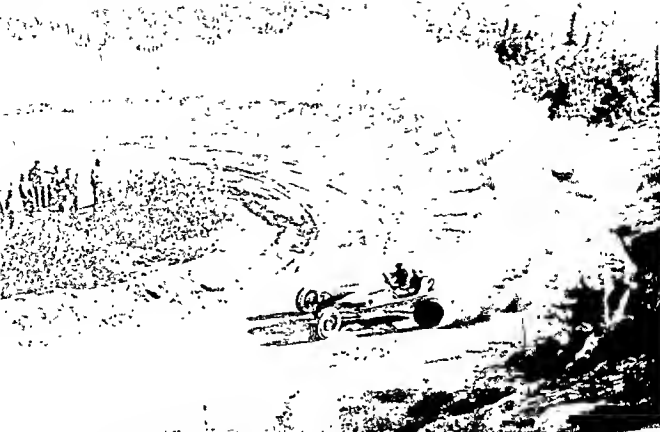
It is important for all drivers to know that the car's energy increases in terms of *the square of its speed*. If you double the speed, you multiply the required stopping distance *four times*! Triple the speed, and you need *nine* times the distance to stop!

Centrifugal Force

Inertia, the force we just studied, tries to keep you going in a straight line. It resists the tendency of a car to turn. But when you make a turn, another pressure is exerted called *centrifugal force*. It tries to fling the car outward.

Centrifugal force tries to fling your car outward on a curve. The sharper the curve and the higher the speed, the greater the force. When the force is stronger than the traction between road and tires, off the road you go.





COURTESY GENERAL PETROLEUM CORPORATION

To overcome centrifugal force, this racing driver has to turn his front wheels forcibly in the direction that the rear end is skidding. Friction "works" for him.

Railroads and modern highways are banked at curves to offset centrifugal force. Aviators bank their planes by throwing the wings against the force (so to speak). But even though most people have experienced this force, few realize how powerful it can be and how much greater it becomes the faster they go. A 3,000 lb. car, making a turn of 500-foot radius at 20 mph, has to overcome a centrifugal force of 156 lbs. But, at 30 mph, that force has grown to 350 lbs., and at 60 mph, it is *nine times*

To test the strength of tires against side thrusts developed from centrifugal force, this test car is being slammed into a screaming turn. The outrigger wheels prevent the car from turning over • To overcome the effects of centrifugal force, test tracks are banked steeply.

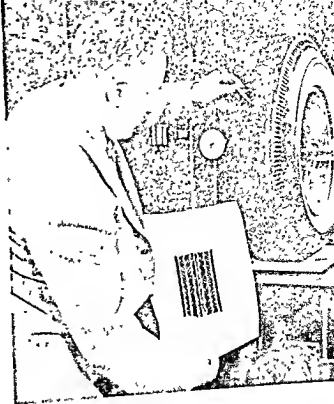
COURTESY STEELWAYS MAGAZINE AND CHEVROLET MOTOR DIVISION, GENERAL MOTORS



Driving

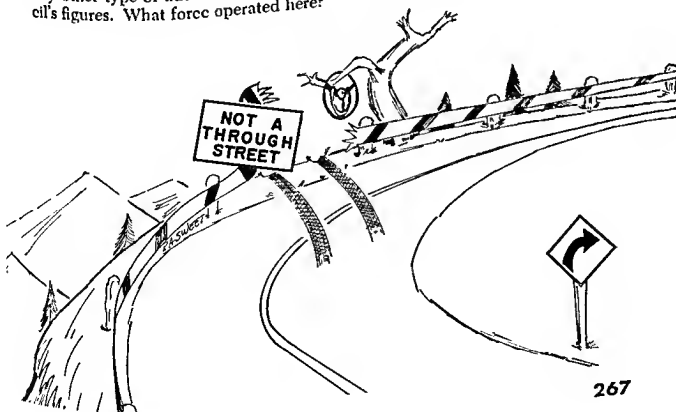
This footprint of a tire shows just how little surface is in contact with the road to maintain your traction.

COURTESY UNITED STATES RUBBER COMPANY



as great as at 20 mph—over 1,400 lbs. trying its best to push you off the road! The only thing that keeps a car on the road in the first place, is traction, and the instant centrifugal force gets greater than traction, you are gone. When you realize that the total tire contact area of *your four tires* with the road is less than 144 square inches (36 square inches per tire), it is no

More people are killed by running off the roadway and overturning than by any other type of automobile accident, according to the National Safety Council's figures. What force operated here?





This view in a rear or side-view mirror does not scare an expert driver because he knows the laws and tries to obey them.

wonder that a car, traveling fast on a curve, will skid off the road.

In one recent year, 14,650 people were killed when their cars overturned or ran off the road at a curve.

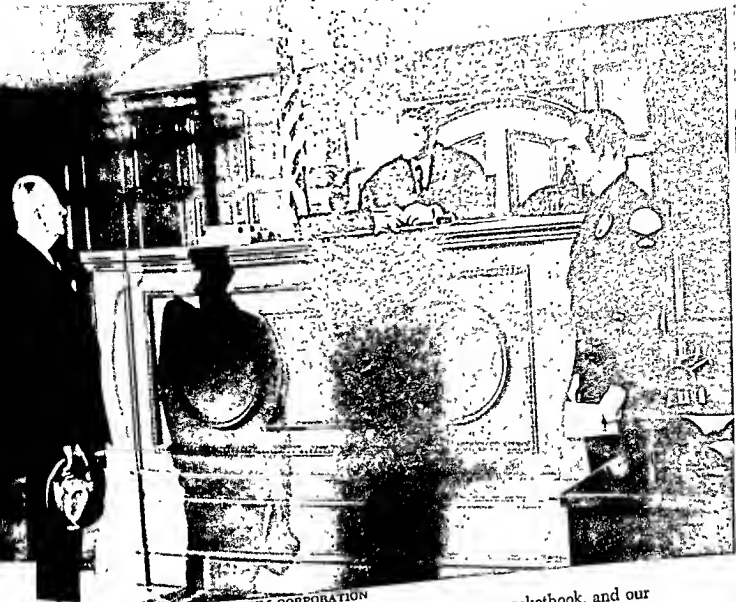
MAN-MADE LAWS

Traffic laws and regulations are made for the protection of motorists and other citizens using the streets. *Speed laws* are meant to prevent some motorists from driving so fast that they endanger the lives of others. *Stop signs* and *traffic signals* are meant to assure all motorists their fair share of the right of way. *Parking regulations* are made in an attempt to give everyone his share of the parking facilities.

The enforcement of traffic laws falls to the police officer. His job is to cite the law breaker so that he can be tried. It is difficult, indeed, to persuade a motorist who has just received a "ticket" that it is for his own good, but without regulations, and police to enforce them, traffic would be impossible. By enforcing regulations, the police officer thus becomes the friend of every motorist.

Car Registration

Each motor-driven vehicle must be registered before it can be driven on the highway—this is the law! The car owner is

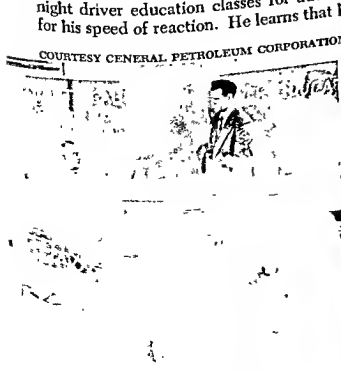



COURTESY GENERAL PETROLEUM CORPORATION

We feel pretty "low" when caught. It hurts our pride, our pocketbook, and our status. When an accident occurs because of our negligence, it may cost a life.

A recent driver education picture humorously depicts the driver above being made to go back to school to correct the error of his ways. Actually, many school authorities are working closely with the courts and have established night driver education classes for adult offenders. The errant driver is tested for his speed of reaction. He learns that he can't "stop on a dime."

COURTESY GENERAL PETROLEUM CORPORATION



10315451627		CERTIFICATE OF TITLE TO A MOTOR VEHICLE		7422237	
<p>The State Highway Department certifies that the applicant herein named has been duly registered in the office of the Department as the lawful owner of the Motor vehicle described below.</p>					
ORIGINAL	<p>APPLICANT'S NAME J. E. Greer</p>		<p>00000000</p>		
	<p>ADDRESS 1000 E. 2nd Street Dallas, Texas</p>		<p>DATE OF SALE 11-1-57</p>		
	<p>VEHICLE MAKE AND MODEL 1957 Ford</p>		<p>VEHICLE TYPE Passenger Car</p>		
	<p>VEHICLE COLOR Black</p>		<p>VEHICLE WEIGHT 2000 lbs.</p>		
	<p>VEHICLE VIN 100-2-27</p>		<p>VEHICLE REGISTRATION 11-1-57</p>		
<p>The applicant has stated under oath that he is the owner of the herein described motor vehicle, subject to the above described liens and encumbrances and no others, and it appears upon the official records of the Department that at the date of the issuance of this certificate, said motor vehicle is subject to the liens hereinbefore enumerated.</p>					
<p>Var. 29, 1958</p>				<p>D. C. Greer, State Highway Engineer By <i>[Signature]</i> T. T. Hinkley, Director Motor Vehicle Division</p>	
<p>SEEK THIS CERTIFICATE OF TITLE IN A SAFE PLACE. DO NOT ACCEPT TITLE AND/OR REGISTRATION WITHOUT COLLECTION OF RATIONALE.</p>					
<p>STATE OF TEXAS</p>					

COURTESY TEXAS DEPARTMENT OF PUBLIC SAFETY

Your car title registration certificate indicates your ownership to the vehicle.

given a *certificate of ownership* (which is his title to the car) when he *has paid* for the car and a yearly *registration certificate* every time he is issued new license plates.

The registration certificate must be carried on the driver's person or displayed in the car at all times. The certificate of ownership should be kept in a safe place at home; if left in the car, a thief might obtain it.

Driver's License

Every operator of a motor-driven vehicle must have a state license to drive the vehicle on the public highways. Such a license is issued to a person of legal age who can pass tests designed to show his physical ability, knowledge of traffic regulations, and skill in handling the car.

Driving is a *privilege—not a right!* A driver's license gives the driver the opportunity to operate his car on the highways

Your driving license is a privilege. It must not be abused.

COURTESY CALIFORNIA DEPARTMENT OF MOTOR VEHICLES

[illegible]

as long as he drives it safely. Should he drive so as to endanger the lives of others, his license may be suspended. Many states have adopted regulations which require a motorist to surrender his driving license if convicted of (1) drunk driving, (2) leaving the scene of an accident, or (3), in some states, three "moving" violations in any twelve-month period. More and more states are adopting such safety regulations.

Financial Responsibility

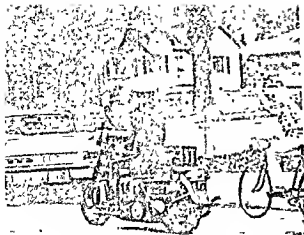
Financial Responsibility

A person who drives a motor vehicle involved in an accident caused by his carelessness can be made to pay for the damage to the other car, doctor and hospital bills, wages lost by the injured person, and, if the loss of some part of his body reduces the injured person's ability to earn his present wage, the driver at fault can be made to make up the difference in wages for the rest of the injured person's life.



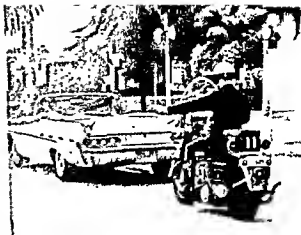
When you break a traffic law, you receive a court summons in "ticket" form.

form.
COURTESY LONG BEACH POLICE DEPART-
MENT
271



COURTESY PONTIAC DIVISION, GENERAL MOTORS CORPORATION

Correct hand signal for a right turn.



Correct hand signal for a left turn.

While it is possible to protect yourself against such law suits by insurance, a court judgment might be for a larger sum than your insurance provides. In this case, you are protected for only the face amount of the policy and must make up the difference in hard cash. *There is no protection like careful, expert driving in a well-maintained car.*

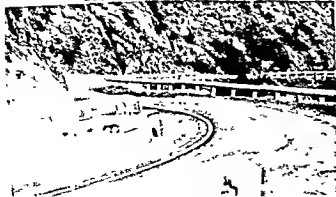
Basic Driving Rules

There exists a fairly uniform code of driving rules which regulate traffic in accordance with good common sense. These rules concern *signaling*, *right-of-way*, and *speed*.

Clear signals are important to warn other drivers of your intentions of turning or stopping. They are for your own protection as well as that of other drivers • Sudden maneuvers, without clear signals, are frequently the cause of an accident • False signals, such as pointing to a distant object or flicking the ashes from a cigarette, may cause another driver to react to what he thinks are your intentions—often with hair-raising

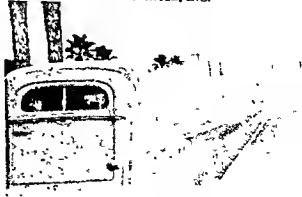
A solid white line is for your protection. Stay on your side of the line.

COURTESY GENERAL PETROLEUM CORP.

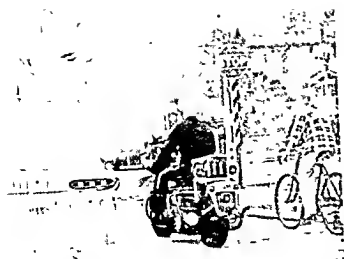


An ambulance with siren sounding always has the right-of-way.

COURTESY MARKEL SERVICE, INC.



Correct hand signal for a stop.



results • Many drivers use both hand signals and turn-signaling devices to be sure they are seen and understood when in congested traffic.

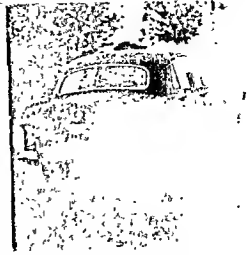
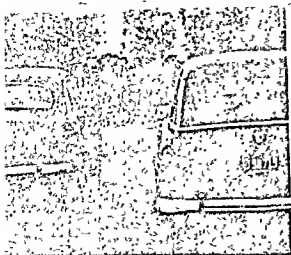
The *right-of-way* is generally reserved for the man on your right, except under certain conditions. For instance, a car entering a through-highway must yield the right-of-way to approaching traffic. The driver of a vehicle approaching an intersection must yield the right-of-way to the driver of a vehicle which has already entered the intersection. But when two drivers enter an intersection at the same time, the driver on the left must yield the right-of-way to the driver on the right. An automobile, making a left turn, must yield the right-of-way to all traffic within the intersection, or so close thereto as to constitute an immediate hazard.

Above all, the right-of-way is not as important as being alive. Therefore, if the other driver demands the right-of-way—give it to him—the right-of-way, that is—otherwise, you may be right, but *dead* right!

An emergency vehicle using a siren has the right-of-way at all times. To give such a vehicle a clear path, come to a

Notice how this car is cutting in front of the ambulance.
This is a clear violation of the law.





COURTESY MARKEL SERVICE, INC.

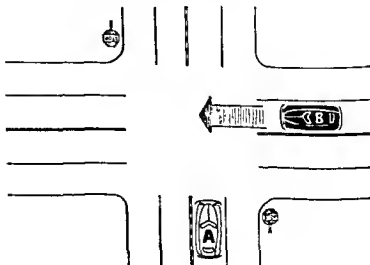
Notice this car is going to make a right turn in front of the panel truck. The truck driver has not yet had time to apply his brakes.

full stop at the side of the road. Stop also when you are approaching a *school bus* in the act of loading or unloading school children. It is a good idea to stop *even when the bus is on the other side of the road*; it is a law in some states.

Speed regulations are generally posted so that the motorist knows the maximum speed permissible; however, there is a general rule that you must keep your speed down to that which is "reasonable and proper" for existing conditions. Under any unusual conditions, this rule takes effect. Darkness, slippery streets, or unusual congestion may make the posted speed limit excessive. Under all circumstances, drive at a speed so that you can stop your car within a reasonable distance.

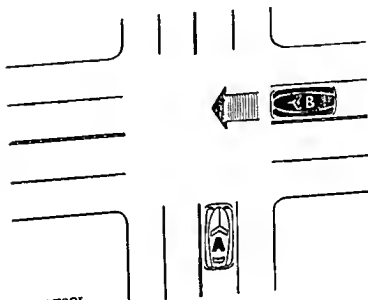
Which Car Has the Right-of-Way? In the following five diagrams, pages 274, 275, and 276, see typical conditions that decide who has the right-of-way at an intersection.

Car B has the right of way because A has a stop sign to obey.



Now, he stops just in time. Notice the stop lights are lit.

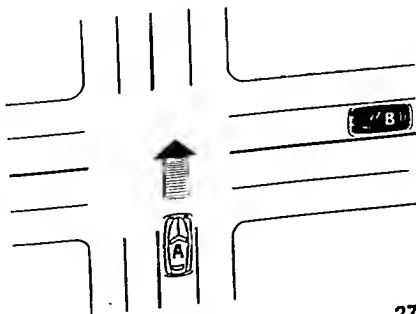
When both cars enter an intersection at the same time, car B has the right of way because he is on the right of A.

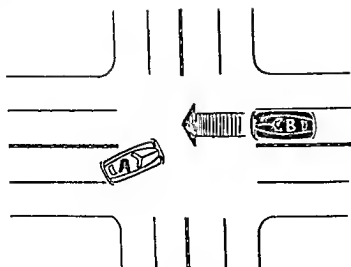


COURTESY CALIFORNIA HIGHWAY PATROL.

These diagrams were made as if the artist were in a helicopter, looking down. For real-life application, notice similar situations "through the windshield" the next time you ride in a car.

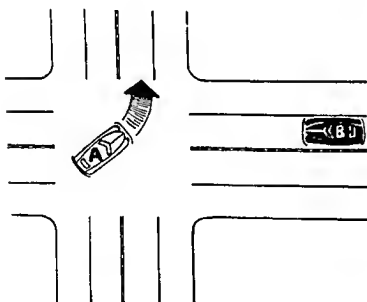
Car A has the right of way because B has not yet entered the intersection.





Car A must wait for B to clear the intersection before making his left turn.

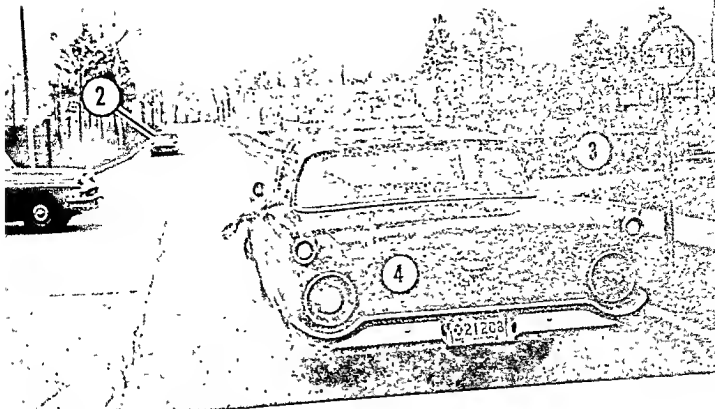
COURTESY CALIFORNIA HIGHWAY PATROL



Car A has the right of way in making this left turn because B has not yet entered the intersection.

Traffic Signs

Traffic signs are made in six basic shapes which all drivers should recognize on sight. A *red* octagonal sign with white lettering, means, "Come to a full stop and make sure the way is clear before proceeding." • A *yellow triangular* sign, with black lettering, requires a driver to slow down at an intersection or stop to yield the right-of-way to cross traffic



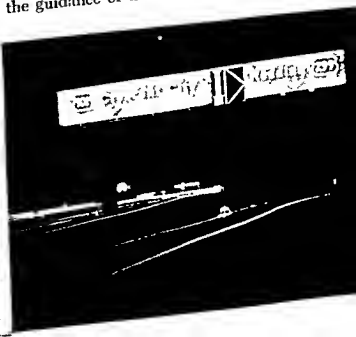
COURTESY FORD MOTOR COMPANY

Which car has the right-of-way? Why?

- The *round yellow sign*, with a large X and RR printed on it, means to slow down to prepare to stop at the railroad crossing which is just ahead • A *diamond-shaped sign*, usually yellow, means slow down because of dangerous or unusual conditions ahead such as curves, side roads, dips, school zones, etc. • A *white rectangular sign*, with the longer side of the rectangle running vertically, and usually with black letters, states the law regarding speed limits, passing regulations, parking, and turning • *Guide or directional signs* are also usually rectangular with the longer side of the rectangle running horizontally. These signs provide information such as mileages and directions to cities and specific locations.

Highway engineers have studied the placement and lighting of signs, which are installed for the protection of the motorist. It pays to obey them • Large signs, with route numbers, are erected for the guidance of the motorist.

COURTESY CALIFORNIA DIVISION OF HIGHWAYS



TYPICAL STANDARD SIGNS



OCTAGONAL SIGNS
MEAN STOP



ROUND SIGNS
MEAN RAILROAD CROSSING



DIAMOND SIGNS MEAN CAUTION
SLOW DOWN



RECTANGULAR SIGNS SHOW TRAFFIC REGULATIONS
AND INFORMATION

COURTESY ASSOCIATION OF CASUALTY AND SURETY COMPANIES

Typical sign shapes take but six basic forms.

A defensive driver sees things that warn of an emergency action. Notice the ball coming into the street from between two parked cars. What would you expect next? This entire action takes place in less than two seconds.

COURTESY MARKET SERVICE, INC.

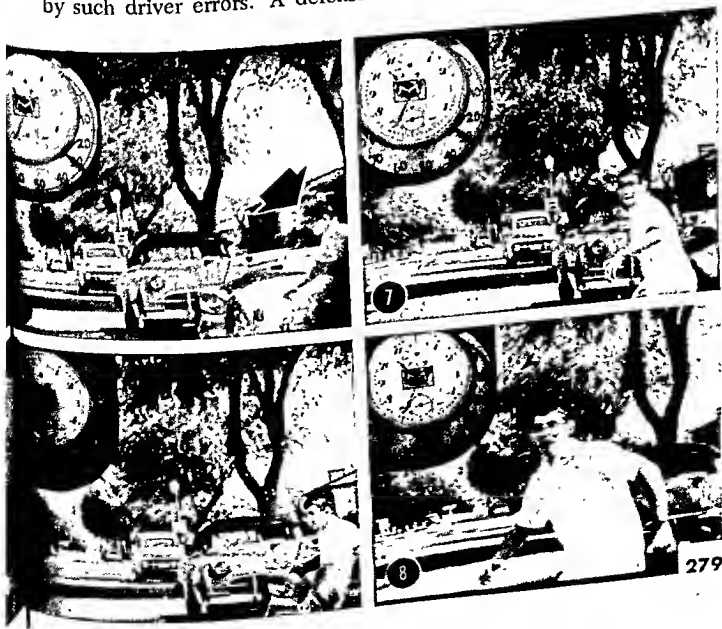


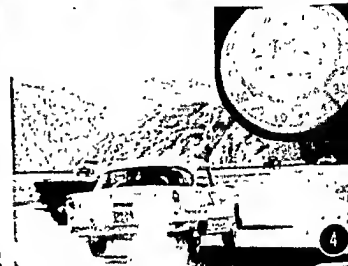
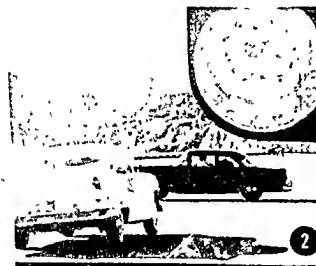
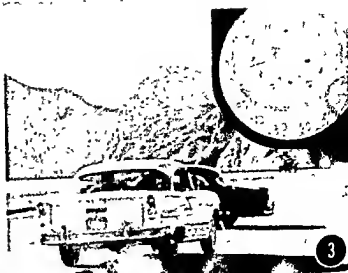
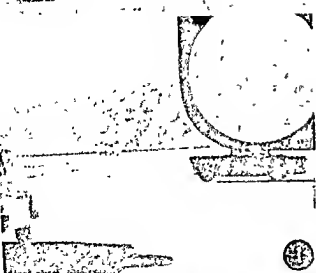
GOOD DRIVING TECHNIQUES

Defensive Driving

Unexpected situations can happen in traffic, and you must always be ready to cope with them. Such alertness is called *defensive driving*. It means to drive with every street or road intersection, every alley, every rough spot, every car, every pedestrian or animal "under suspicion."

If you are driving on the open road and see an approaching long line of cars following a slow-moving truck—slow down. One of these drivers might turn out suddenly to pass the truck. "But how can a sensible driver do such a foolish thing?" you might ask. Well, he may not be sensible—he may be drunk or emotionally upset, he may have "just looked and not have seen anything ahead," or he may not be able to judge accurately the speed of your car. Over 90% of all accidents are caused by such driver errors. A defensive driver always expects the





Errors of judgment will always be with us. But if you drive defensively, you will be ready for emergencies. The above action at 40 mph, took place in less than one second.

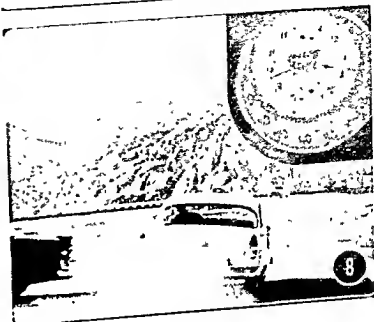
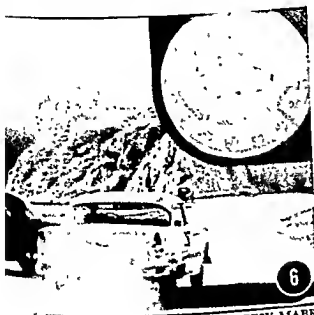
worst of other drivers; and when they do the wrong thing, he is prepared to cope with the situation.

To minimize the chances of sudden unexpected emergencies from marring your driving pleasure, give yourself a margin of space and time to react. If you drive *bumper-to-bumper* with the car ahead, you won't be able to avert a collision if the car ahead should make a sudden stop. A safe following rule is to stay at least *one car length* behind the vehicle you are following for each *ten miles per hour* of your own speed. In



If the car ahead stops suddenly, a close-following driver does not have time to react. The result is a rear-end collision and possible fire if the gas tank is ruptured.

COURTESY MARKEL SERVICE, INC.



COURTESY MARKEL SERVICES, INC.

other words, if you are traveling 30 mph, keep at least three car lengths behind the car in front of you.

Learn to watch out for unexpected moves from parked vehicles. Usually, there are some warnings, but you must be alert. For example, if you see exhaust fumes coming from one of a parked row of cars, or if someone simply is at the wheel of a parked car, he may pull out right in front of you. "How can anyone be so dumb?" you might ask. Well, it is possible, because such accidents happen every day.

Just as you need a safety margin ahead, you also need to

A defensive driver expects another driver to get out of the car directly in front of him, so he is prepared.

COURTESY LONG BEACH POLICE DEPARTMENT



protect yourself from behind. Expert drivers know that when they want to turn or stop, merely making the proper signal is not enough. Make it a rule to start working into the correct lane position several blocks ahead. If someone sees you gradually working over to the right, for example, he naturally figures that you're going to turn or stop. So he probably gives you a wide berth to keep out of trouble. And when he does, he keeps you out of trouble, too.

Learn to glance occasionally at your rear- and side-view mirrors so that you are continually aware of traffic conditions behind you. Be ready to give emergency vehicles and overtaking cars plenty of passing space. You're defending yourself against the driver behind you. He may have poor brakes, faulty eyesight, or may be under the influence of alcohol. If you do see that he is disregarding your signals, and he's going to work over your rear end to shorten the wheelbase, *accelerate to get clear of him*. If you want to turn off, it's better to make your turn a block or two farther on; remember, some drivers will pass on either side, and no turn is safe till they are past you.

Courtesy

Almost all motor-vehicle accidents could be prevented by observance of courteous and safe driving habits. Courtesy behind the wheel is a mark of an expert driver.

Examples of the courteous driver are: When two lanes of traffic have to merge into a single lane, the courteous driver waits his proper turn • He is especially considerate of a fellow motorist who has made a mistake in judgment, permitting him to recover a safe speed and position regardless of who may be at fault • He gives pedestrians every "break" possible, whether they are in a crosswalk or not • He keeps his temper at all times • He uses his horn as a warning, not as a means of scolding or tormenting other people • He thinks of persons who are riding with him; if he makes them nervous, they can distract his attention from the all-important task of driving safety.

TOPICS FOR DISCUSSION

1. Why, with today's easily operated cars, is it said that driving in congested traffic is a highly skilled activity?
2. Why do you think your parents will be apprehensive when you want to drive?
3. Discuss the seriousness of the accident problem, using examples of cases you know.
4. Why is driver education necessary?
5. What are the main objectives of driver education?
6. How do bicycle regulations vary from motor-driven vehicular regulations?
7. What are the legal requirements of cycling? Common-sense requirements?
8. What is defensive driving?
9. Describe an expert driver.
10. How does one become an expert driver?
11. What are the three types of accident-repeater drivers?
12. Describe the egoist.
13. What actions characterize an egoist driver?
14. Describe the show-off.
15. What actions characterize a show-off driver?
16. Describe an emotionally disturbed driver.
17. What actions characterize an emotionally disturbed driver?
18. Why is it important to understand your physical strengths and weaknesses?
19. What is meant by reaction time? Why is it important?
20. How does *reaction-time distance* differ from *stopping distance*?
21. Discuss the importance of knowing how much the stopping distance varies with speed.
22. What is visual acuity? Why is it important?
23. What is field of vision? Why is it important?
24. Describe what happens to the pupils of the eyes when exposed to glare.
25. Why is color blindness considered relatively unimportant as a cause of accidents?
26. Discuss the dangers of driving long hours without rest.
27. Discuss the dangers of running an engine in a closed garage.
28. Why is drinking and driving dangerous?
29. Why is it so important to understand nature's forces?
30. What is traction? Why is it important?
31. What is inertia? Why is it important?
32. What is centrifugal force? Why is it important?
33. Discuss the importance to a driver of knowing that centrifugal force builds up in a high mathematical ratio.

protect yourself from behind. Expert drivers know that when they want to turn or stop, merely making the proper signal is not enough. Make it a rule to start working into the correct lane position several blocks ahead. If someone sees you gradually working over to the right, for example, he naturally figures that you're going to turn or stop. So he probably gives you a wide berth to keep out of trouble. And when he does, he keeps you out of trouble, too.

Learn to glance occasionally at your rear- and side-view mirrors so that you are continually aware of traffic conditions behind you. Be ready to give emergency vehicles and overtaking cars plenty of passing space. You're defending yourself against the driver behind you. He may have poor brakes, faulty eyesight, or may be under the influence of alcohol. If you do see that he is disregarding your signals, and he's going to work over your rear end to shorten the wheelbase, *accelerate to get clear of him*. If you want to turn off, it's better to make your turn a block or two farther on; remember, some drivers will pass on either side, and no turn is safe till they are past you.

Courtesy

Almost all motor-vehicle accidents could be prevented by observance of courteous and safe driving habits. Courtesy behind the wheel is a mark of an expert driver.

Examples of the courteous driver are: When two lanes of traffic have to merge into a single lane, the courteous driver waits his proper turn • He is especially considerate of a fellow motorist who has made a mistake in judgment, permitting him to recover a safe speed and position regardless of who may be at fault • He gives pedestrians every "break" possible, whether they are in a crosswalk or not • He keeps his temper at all times • He uses his horn as a warning, not as a means of scolding or tormenting other people • He thinks of persons who are riding with him; if he makes them nervous, they can distract his attention from the all-important task of driving safety.

TOPICS FOR DISCUSSION

1. Why, with today's easily operated cars, is it said that driving in congested traffic is a highly skilled activity?
2. Why do you think your parents will be apprehensive when you want to drive?
3. Discuss the seriousness of the accident problem, using examples of cases you know.
4. Why is driver education necessary?
5. What are the main objectives of driver education?
6. How do bicycle regulations vary from motor-driven vehicular regulations?
7. What are the legal requirements of cycling? Common-sense requirements?
8. What is defensive driving?
9. Describe an expert driver.
10. How does one become an expert driver?
11. What are the three types of accident-repeater drivers?
12. Describe the egoist.
13. What actions characterize an egoist driver?
14. Describe the show-off.
15. What actions characterize a show-off driver?
16. Describe an emotionally disturbed driver.
17. What actions characterize an emotionally disturbed driver?
18. Why is it important to understand your physical strengths and weaknesses?
19. What is meant by reaction time? Why is it important?
20. How does *reaction-time distance* differ from *stopping distance*?
21. Discuss the importance of knowing how much the stopping distance varies with speed.
22. What is visual acuity? Why is it important?
23. What is field of vision? Why is it important?
24. Describe what happens to the pupils of the eyes when exposed to glare.
25. Why is color blindness considered relatively unimportant as a cause of accidents?
26. Discuss the dangers of driving long hours without rest.
27. Discuss the dangers of running an engine in a closed garage.
28. Why is drinking and driving dangerous?
29. Why is it so important to understand nature's forces?
30. What is traction? Why is it important?
31. What is inertia? Why is it important?
32. What is centrifugal force? Why is it important?
33. Discuss the importance to a driver of knowing that centrifugal force builds up in a high mathematical ratio.

SELF-CHECK TESTS

True-False

1. Young drivers who have had driver education are involved in half as many accidents as the same number of their age group who have not had such training.
2. A bicycle rider is subject to all the same laws and regulations that apply to an automobile operator.
3. Mechanical failure contributes to the cause of many bicycle accidents.
4. According to law, a bicycle rider must have a warning bell or horn.
5. Courtesy is one of the marks of an expert driver.
6. The extent to which an egoist will go to abuse the rights of others seems limited only by fear of punishment.
7. Recognition is a basic human need.
8. The show-off usually is suffering from an inferiority complex.
9. Temper and maturity usually go hand in hand.
10. Understanding one's own strengths and weaknesses is necessary to become an expert driver.
11. An expert driver can stop on a dime.
12. Your braking distance is equal to your reaction-time distance.
13. Visual acuity of 20/70 or better is necessary for a driver.
14. People with tunnel vision can see better in dark places.
15. Color blindness is more often a male than a female problem.
16. Six hours of steady driving is not sufficient to tire you enough to slow up your muscular coordination.
17. One way to test a driver who has been drinking is with the use of a balloon.
18. The coasting of a car is due to traction.
19. Centrifugal force is another name for inertia.

Matching

- | | |
|---------------------------|--|
| 1. Defensive | 1. Courteous driver |
| 2. Expert | 2. Immature driver |
| 3. Accident repeater | 3. Alert driver |
| 4. Egoist | 4. Angry driver |
| 5. Show-off | 5. Self-centered driver |
| 6. Emotionally disturbed | 6. Reckless driver |
| 7. Reaction-time distance | 7. Braking distance plus reaction-time distance |
| 8. Braking distance | 8. Distance required to get your foot on the brake pedal |
| 9. Stopping distance | 9. Distance car rolls after the brakes are applied |

Completion

1. A class in driver education teaches more than how to operate an automobile. It implants in the mind the correct _____ and knowledge that means the difference between driving safely or recklessly.
2. The _____ seems to believe he is the only important driver on the road, and shows it by disregarding the rights of others.
3. The _____ driver makes tire-screaming starts.
4. _____ drivers are easily upset over trifles.
5. Your _____ is your ability to see to the side without turning your head.
6. A skilled driver looks slightly to one side of the road or _____ to minimize the effects of glare until the approaching car passes.

Multiple-Choice

1. Motor car accidents kill one person every: (a) 5 minutes; (b) 15 minutes; (c) 30 minutes.
2. Insurance companies offer those who have taken driver education insurance discounts of up to: (a) 15%; (b) 25%; (c) 30%.
3. Which of the following characteristics does not apply to an expert driver: (a) correct mental attitude; (b) smooth driving; (c) can stop on a dime?
4. Which of the following characteristics may apply to an egoist driver: (a) seems always angry; (b) makes tire-screaming starts; (c) uses two parking spaces?
5. Which of the following characteristics may apply to a show-off driver: (a) seems always angry; (b) makes tire-screaming starts; (c) uses two parking spaces?
6. Which of the following characteristics may apply to an emotionally disturbed driver: (a) seems always angry; (b) makes tire-screaming starts; (c) uses two parking spaces?
7. The average person's reaction time is about: (a) 2 seconds; (b) $\frac{1}{2}$ second; (c) $\frac{1}{4}$ second.
8. Glare can affect a driver's eyesight so that the pupils may not return to normal for: (a) 5 minutes; (b) 2 minutes; (c) one minute.
9. Color-blind drivers can receive the same warnings as quickly as normal drivers do from signs by their: (a) shape; (b) color; (c) words.
10. Drinking drivers are involved in about: (a) 90%; (b) 75%; (c) 50% of all fatal accidents.
11. Which of the following is not one of nature's laws: (a) traction; (b) financial responsibility; (c) inertia?
12. You get most traction: (a) on an icy road; (b) at high speeds; (c) by "pumping" the brake.

INDEX

- Accident reports, 138
- Acids
 - eye burns, 166
 - mixing of, 34
 - treatment for, 105
- Agricultural safety, 140, 142-145
- Alcohol, 259
- Alertness, 24
- Ammonium nitrate, care in handling, 147
- Antiseptics, 57
- Arterial bleeding, 163
- Artificial respiration, 154, 157
- Aspirin, 56
- Baby-sitter's fact sheet, 135
- Baby sitting, 134
- Bathroom safety, 53, 54
- Blasting caps, 99
- Boating safety, 103-109
- Braking distance, 251
- Building safety patrol, 31
- Buoys, 107
- Burns, caustic, 165
- Burns, eye, 166
- Bus safety patrol, 29
- Camping safety
 - campfires, 126
 - campsite precautions, 111
 - dress, 111
 - forest fires, 125
 - getting lost, 118
 - hunting, 112
 - poisonous plants, 119
 - problems of, 111
 - snakes, 120
- Carbon monoxide, 259
- Carbon tetrachloride, 164
- Causes of fire, 160
- Caustics, 78, 165, 166
- Centrifugal force, 265
- Chemicals, 145
- Children's safety, 73-83
- Cigarettes, 58, 186, 168
- Circuit breaker, resetting of, 64
- Class "A" fire extinguishers, 201
- Class "B" fire extinguishers, 203
- Class "C" fire extinguishers, 203
- Color blindness, 256
- Committees, safety, 30-38
- Conscious actions, 27
- Conservation of nature, 124
- Cough medicine, 56
- Courtesy in driving, 282
- Cycle
 - defensive driving, 239
 - legal requirements, 239
 - safety, 237
- Defensive driving, 239, 279
- Defensive walking, 227
- Depth perception, 254
- Driver characteristics, 241-248
- Driver education, 235
- Drivers, factors of inefficiency, 258-259
- Driver, physical equipment of
 - color blindness, 250
 - depth perception, 254
 - field of vision, 253
 - night vision, 254
 - reaction time, 250
 - visual acuity, 253
- Driving regulations, 272
- Driving safety
 - accident problem, 234
 - braking distance, 251
 - cycle safety, 237
 - driver characteristics, 241
 - driver education, 235
- Driving techniques
 - courtesy, 282
 - defensive driving, 279
- Effective safe living, 23, 99
- Egoist, 245
- Electricity, 60-68
- Electric wires, fallen, 217
- Emotionally disturbed driver, 248
- Engineer, safety, 137
- Expert driver, 241
- Extinguishers, types of, 201-204
- Eye burns, treatment for, 166
- Fallen electric wires, 217
- Falls
 - camping, 111
 - causes of, 69
 - home, 69
 - ice, 127
 - infants, 74
 - ladders, 92
 - problem of, 69
 - toddlers, 79, 60
- Fatigue in driving, 258
- Fertilizers, 147
- Field of vision, 253
- Financial responsibility laws, 271
- Fires, causes of
 - cigarettes, 186
 - electricity, 195
 - home heating, 191
 - lightning, 194
 - matches, 186
 - poor housekeeping, 189
 - spontaneous combustion, 185, 194
 - volatile liquids, 181
- Fire extinguishers, 201-204
- Fire fighting, 198-199
- Fire prevention, 180
- Fires, training for emergencies, 177

Fires, types

- barn, 193
- class "A", "B", "C", 197
- electrical, 195
- forest, 125
- lightning, 194
- motorboat, 195
- service station, 132
- trash, 190
- volatile liquids, 181

First aid

- artificial respiration, 154
- bandages, 167
- breathing aids, 153
- burns, 165
- dressings, 167
- eye burns, 166
- eye, foreign bodies, 165
- fractures, 158
- general directions, 152
- heat exhaustion, 171
- poisoning, 169
- scalds, 165
- snake bites, 171
- sun stroke, 171
- traumatic shock, 159
- wounds and their care, 161

First-aid station, 138

Furnace, banking of, 60

Fuses, 63, 64

Getting lost, 118

Grocery store clerk safety, 131

Heat exhaustion, 171, 173

Heating, home, 60

Hobby safety, 88, 90-94

Holiday safety, 84-87

Homemaking class safety, 36

Homemaking class safety committee, 31

Home safety

- bathroom, 53
- children, 73
- electricity, 60
- falls, 69
- heating, 60
- hobbies, 87
- holidays, 85
- kitchen, 50
- living room, 57
- problem of, 49
- responsibility for, 49
- stairs, 59
- storage areas, 58

Hunting safety, 114, 115

prevention of accidents, 114

Hurricanes, 213

Industrial safety, 130

Inertia, 264

Infant, bathing of, 75

Infant, falling, 74

Infection, 164

Insecticides, 77, 145

International air rescue symbols, 119

Intersections, 223

Jaywalking, 227

Kerosene, 185

Kitchen safety, 50-53

Ladders, 93, 94

Lawn mowers, 91, 92

Laws affecting driving: Man-made laws

- basic driving rules, 272
- enforcement agency, 268
- financial responsibility, 271
- license, 270
- registration, 268
- traffic signs, 276

Laws affecting driving: Nature's laws

- centrifugal force, 265
- inertia, 264
- traction, 263

Laxatives, 56

Lead poisoning, 75

License regulations, 270

Lifting, 94

Lightning, 219

Livestock, 144

Man-made laws affecting driving, 268

Matches, 186

Medicine cabinet, 54

Medicines, 55-57

Meetings, safety, 138

Mouth-to-mouth artificial respiration, 157

Nature's laws affecting driving, 262

Newspaper delivery boy safety, 131

Night vision, 254

Normal-abnormal driver, 245

Office work, 135

On-the-job safety, 131-136

Panic, 179

Participation

- active, 20
- passive, 26

Patrols, safety, 29-32

Pedestrian safety, 223-227

Personality self-check for non-drivers, 249

Physical education safety, 30, 37, 38

Plants, poisonous, 120

Playground safety committee, 30

Poisons

- antidotes for, 171
- caustics, 78
- children eating, 77
- education for, 63
- extracts and flavoring, 78

- farm chemicals, 145
- first aid for, 169
- insecticides, 77, 145
- storage of, 77
- Power lawn mowers, 90
- Preparation, importance of, 21
- Prescriptions, 55
- Prevention of fire, 180
- Problems of school safety, 28
- Rabies, 89
- Razor blades, 54
- Reaction time, 250
- Registration of automobiles, 268
- Rockets, 35
- Safest way to school, 225
- Safety class objectives, 26
- Safety, cycle, 237
- Safety education
 - at home, 49
 - children's, 83
 - first lessons in, 16
 - for "he" men, 17
 - in school homemaking classes, 38
 - in school physical education classes, 38
 - in school science classes, 32
 - in school shops, 38
 - need for, 14
 - why study, 14
- Safety engineer, 137
- Self-check tests
 - Chapter 1, need for safety, 25
 - Chapter 2, school, 47
 - Chapter 3, home, 98
 - Chapter 4, vacation, 130
 - Chapter 5, on the job, 139
 - Chapter 6, agriculture, 148
 - Chapter 7, first aid, 174
 - Chapter 8, fire, 206
 - Chapter 9, storms, 221
 - Chapter 10, pedestrian, 231
 - Chapter 11, driving, 264
 - For non-drivers, 249
- Service station work safety, 132
- School safety, 28, 32, 36, 38
- Science class safety committee, 31
- Science laboratory safety, 33, 34
- Shock, electrical
 - fallen electric wires, 217
 - portable equipment, 67
- Shock, traumatic, 159
- Shop safety
 - bandsaw, 44
 - circular saw, 42
 - duties of the shop safety committee, 38
 - hand tools, 40
 - jointer, 45
 - power-driven machinery, 41
 - sander, 48
 - shaper, 45
 - wood lathe, 43
- Shop safety committee, 31, 38
- Show-off driver, 248
- Sleeping tablets, 58
- Snakes, poisonous, 121, 122
- Sneaky killers, 56
- Spontaneous combustion, 185, 194
- Sports, winter, 127
- Sports, winter, ice rescues, 128
- Storms, 209, 210, 213
- Storage area safety, 58
- Streetcar safety patrol, 29
- Subconscious actions, 27
- Sun stroke, 171, 172
- "Ten Commandments" of gun safety, 115
- Texas City disaster, 147
- Topics for discussion
 - agricultural safety, 147
 - driving safety, 263
 - fire, 208
 - first aid, 173
 - home safety, 98
 - on-the-job safety, 139
 - pedestrian safety, 231
 - school safety, 47
 - storms, 221
 - vacation safety, 129
 - why study safety, 24
- Tornadoes, 210
- Tourniquet, 181, 164
- Traction, 283
- Tractor safety, 142
- Traffic patrol, 31
- Traffic signs, 278
- Training for emergencies
 - fire, 177
 - first aid, 149
 - storms, 209
- Treatment for caustic burns, 185
- Treatment for eye burns, 166
- Vacation safety
 - camping, 111
 - finding your way back, 119
 - hunting, 112
 - poisonous plants, 119
 - snakes, 120
 - vacant lots, 99
 - water sports, 101
 - winter sports, 127
- Venous bleeding, 164
- Visual acuity, 253
- Volatile liquids, 59, 161, 185, 195
- Water sports, 101, 103, 109
- Winter sports, 127
- Wounds, 161-164